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Medical Physics Oral History Series

James L. Born, M.D.

PHYSICIAN AND ADMINISTRATOR AT DONNER LABORATORY

An interview conducted by
Sally Smith Hughes, Ph.D.
in 1979

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Since 1954 the Regional Oral History Office has been interviewing leading participants in or well-placed witnesses to major events in the development of Northern California, the West, and the Nation. Oral history is a method of collecting historical information through tape-recorded interviews between a narrator with firsthand knowledge of historically significant events and a well-informed interviewer, with the goal of preserving substantive additions to the historical record. The tape recording is transcribed, lightly edited for continuity and clarity, and reviewed by the interviewee. The corrected manuscript is indexed, bound with photographs and illustrative materials, and placed in The Bancroft Library at the University of California, Berkeley, and in other research collections for scholarly use. Because it is primary material, oral history is not intended to present the final, verified, or complete narrative of events. It is a spoken account, offered by the interviewee in response to questioning, and as such it is reflective, partisan, deeply involved, and irreplaceable.

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San Francisco Chronicle,
Tuesday, October 27, 1981, p.23

Dr. James L. Born

Memorial services are pending for Dr. James L. Born, 66, who became a top medical scientist and administrator at the University of California's Donner Laboratory after switching from a successful law career. He died Saturday of lung cancer.

In 1952, while he was a staff physician at the Kaiser Foundation Hospital in Oakland, Dr. Born was recruited by the founder of the Donner Laboratory, Dr. John H. Lawrence, now a UC regent. The two pioneered the treatment of tumors with high energy particles from the 184-inch cyclotron atom smasher at the Lawrence Radiation Laboratory.

"Jim was responsible as much as anyone for the success of that laboratory," Lawrence said yesterday. "He had this great, friendly personality and leadership quality on top of being a fine physician. The university owes him a great debt."

Dr. Born was director of the laboratory from 1970 through 1975, and since 1976 directed medical operations for the facility. Much of his time was devoted to administration, but he also pursued research on new treatments for blood disorders, cancer, and occupational and radiation injuries.

Dr. Born was a native of Ann Arbor, Mich., and obtained a law degree from the University of Wisconsin in 1940. He was Wisconsin's acting assistant attorney general from 1942 to 1944. He then left law, returned to the University of Wisconsin and obtained his medical degree in 1948.

Dr. Born is survived by his wife, Jean, and their children: Deborah Born of Berkeley, and Stephen Born of Gaithersburg, Md.

BORN, DR. JAMES L(EE), 1151 Woodside Road, Berkeley 8, Calif. MEDICINE. Ann Arbor, Mich, July 25, 15; m. 46; c. 2. A. B, Ohio State, 36; L.L B, Wisconsin, 40, M.D, 48. Assoc. mem, Wilkie, Toebaas, Hart, Kraege & Jackman, 40-42; state asst. attorney gen, Wis, 42-44; intern, Highland-Alameda County Hosp, Calif, 48-49, asst. res. surgeon 49-50; ASSOC. PHYSICIAN, CALIFORNIA, 50- , ASST. DIR, DONNER LAB, 51- Blood dyscrasias and neoplastic diseases; occupational health and radiation safety.

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Acknowledgement

This interview with Dr. James L. Born is one of several dealing with the development of Crocker and Donner laboratories, within the larger series of oral histories produced by the History of Science and Technology Program of The Bancroft Library.

Besides these interviews, the Program assembles other primary source materials, including the papers and personal memorabilia of scientists and engineers, and the papers of certain organizations with which they were associated. The information in the papers and interviews helps to demonstrate the development of science and technology not only in the western United States, but also in the nation as a whole.

The project was made possible initially by the generosity of William R. Hewlett and David Packard. Mrs. Calvin K. Townsend established the Doreen and Calvin K. Townsend Fund to provide ongoing support of the Program. The University Endowment Fund, National Science Foundation, and National Endowment for the Humanities have assisted diverse aspects of the Program with a series of grants. Further aid has come from the Marco Francis Hellman Fund, established to document science and technology and their relations to business in California. The James Born oral history was also aided by a gift from the Chabot and Dieckmann Memorial Library Fund. Other donors to the project have included the Woodheath Foundation, the California Alumni Foundation, and the Watkins-Jones Company.

1980

James D. Hart
Director
The Bancroft Library

The Medical Physics Oral History Series

The series, conducted in 1978-1980 under the auspices of the History of Science and Technology Program [HSTP] at The Bancroft Library, was funded by the National Endowment for the Humanities to document medical physics and biophysics at the University of California, Berkeley. Sally Smith Hughes, advised by Roger Hahn and John Heilbron of the Office of the History of Science and Technology, conducted interviews with thirteen individuals associated with Donner and Crocker laboratories and the Division of Medical Physics. All of the interviews had been transcribed and edited when the grant terminated in 1980. Some of the transcripts were subsequently reviewed and approved by the interviewee, processed by various individuals associated with HSTP, and made available for research as bound and indexed volumes. They are: Patricia Durbin, John Gofman, Alexander Grendon, William Myers, Kenneth Scott, and William Siri. Other transcripts have for years remained in various stages of completion, and only in 1999, under the aegis of David Farrell, the new HSTP curator, are being reconsidered for processing and release. Sally Hughes, now of the Regional Oral History Office, has been asked to finalize the remaining oral histories with James Born, Hal Anger & Donald van Dyke (joint interview), Thomas Hayes, John Lawrence, Howard Mel, Alexander Nichols, & Cornelius Tobias.

The oral histories, in conjunction with archival holdings at The Bancroft Library and Lawrence Berkeley Laboratory, will be useful in constructing a picture of the growth and development of the fields of medical physics and biophysics, in which the Berkeley research and academic institutions played an early and significant role. The interviews are of particular historical interest for their depiction of the early use of cyclotron-produced radioisotopes and radiations in science and medicine. The series complements other oral histories, at Bancroft Library and at the American Institute of Physics, pertaining to the development of Lawrence Berkeley Laboratory and the subdisciplines of physics.

Sally Smith Hughes, Ph.D.
Research Historian

January 2000
Regional Oral History Office
The Bancroft Library
University of California, Berkeley

HISTORY OF SCIENCE AND TECHNOLOGY PROJECT
MEDICAL PHYSICS ORAL HISTORIES

COMPLETED

James L. Born, "Physician and Administrator at Donner Laboratory"
Patricia W. Durbin-Heavy, "Oral History Interview with Patricia Wallace Durbin, 1979-1980"
John Gofman, "John Gofman: Medical Research and Radiation Politics"
Alexander Grendon, "Alexander Grendon: Research with Hardin Jones at Donner Laboratory, 1957-1978"
William G. Myers, "William G. Myers: Early History of Nuclear Medicine"
William E. Siri, "William E. Siri: Biophysical Research at Donner Laboratory, 1945-1975"

IN PROCESS

Hal O. Anger & Donald C. Van Dyke (joint interview)
Thomas Hayes
John H. Lawrence
Howard C. Mel
Alexander V. Nichols
Kenneth G. Scott
Cornelius Tobias

CURRICULUM VITAE

JAMES LEE BORN

1915	Born July 25, Ann Arbor, Michigan Father: Frank George Born Mother: Leona Natalie Lee Born
1936	A.B., Ohio State University
1940	L.L.B., Wisconsin University
1940-1942	Associate Member, Wilkie, Tobias, Hart, Kraege and Jackman Law Firm, Madison, Wisconsin
1942-1944	State Assistant Attorney General, Wisconsin
1948	M.D., Wisconsin University
1948-1949	Intern, Highland-Alameda County Hospital, Oakland, California
1949-1950	Assistant Resident Surgeon, Highland-Alameda County Hospital, Oakland, California
1950-1981	Associate Physician, University of California, Berkeley
1951-1970	Assistant Director, Donner Laboratory, University of California, Berkeley
1970-1975	Director, Donner Laboratory, University of California, Berkeley
1976-1981	Director of Medical Operations, Donner Laboratory Chairman, Human Use Committee, Lawrence Berkeley Laboratory
1977-1981	Chairman, Radioactive Drug Research Committee, Lawrence Berkeley Laboratory

Date of interview: 9 February 1979

FAMILY BACKGROUND AND EARLY EDUCATION

Hughes: I know you were born in Ann Arbor, Michigan, on July 25, 1915, but I don't know anything about your origins. Could you tell me a little about your grandparents and where they came from and what they did for a living and what their education was?

The Paternal Side

Born: George Born, my grandfather on my father's side, was a carpenter in the small town of Dowagiac in southern Michigan, which was essentially a German community. The original inhabitants, including his parents, had come over from Germany around the 1840s and 1850s. His main work was building houses and reselling them to other people, and then in his later years, he worked for a furnace company there making various types of wooden forms for the manufacturer of hot air furnaces. I don't know anything about his educational background. I have no idea whether he had a high school education or not.

His wife, Elizabeth Cook Born, my grandmother on that side, was also from that same area, born there just before the Civil War. Her father had been a pioneer in that area, obtained government land, built a log cabin, lived there, and eventually became a prosperous farmer. I don't know what her background was educationally, but she had sufficient education to qualify her to teach country school, and was also an organist in the church. They were very simple, kind people, and lived out their lives in the same small area.

My father [Frank George Born] went to college with practically no financial help because his parents didn't have the kind of money that it took, even in those days, to send him to college. He went to college in Michigan, the college which is now Michigan State University, and graduated in mechanical engineering in 1909. He worked his way through college with the assistance of a $250 loan during the four years of college from his sister. I guess that was a lot of money then.

Hughes: Was he the first in the family to go to college?

Born: Yes. When he graduated in 1909, the automative industry was new and growing rapidly. His field of interest was automotive engineering. His first job was chief engineer for a company that put out what was called a Lindsay automobile. I think they manufactured four or five hundred cars and then went under. And then he went with a number of other companies; he went with Gray Marine Motors, and with Packard Motors, and then probably around 1920 or '22 or ['2]3, he went with General Motors and was with General Motors for a long period of time. With General Motors, our family lived all around the Midwest, wherever he worked as an engineer.

Hughes: So he was transferred even after he began to work with General Motors?

Born: Oh, yes, because his field of work became the design and development of brakes, springs and shock absorbers for automobiles. He worked first on mechanical brakes, later on hydraulic brakes, and then on electric brakes. He left General Motors to go with Warner Electric Brake and Clutch Company, where he successfully developed electric brakes for big trucks and semi-trailers. He worked with this company until his retirement, and then he came out and retired in Carmel, and died at the age of 88, about five years ago. So that was my father's side.

The Maternal Side

Hughes: And your mother's side?

Born: They were predominantly Irish-English, and they came through Rochester, New York, as early settlers to Michigan, and settled in Flint, Michigan, around the time of the Civil War. My grandfather was the most recent member of the family to come from Europe. He came from Ireland and landed in New York on the day that Lincoln was shot.

He and his parents went to the Middle West, and settled there. He came from an English family that had been landed gentry in Ireland for three or four hundred years, but had remained almost totally English. His father was one of seven sons, and so had to leave because land descended only to the oldest son. My grandfather first had a high school education, then he taught school for a while, then he read law. In those days you'd read with a lawyer in a law office or with a judge for a certain period of time, then you'd take the bar examination, and if you passed it, then you were a lawyer. And so that's what he did. He practiced law until his death in Flint, Michigan, at the age of 68. He lived in the time that Flint became an automotive center, and so he was closely allied with the early people in the development of General Motors. He was very active in civic and business affairs in the city of Flint, being mayor, and being on various boards of directors.

He married a woman, Caroline McDermott Lee, who was an only child of an Irish family. Her father was a very successful man in Flint who had his finger on everything in the town. For example, he owned the hotel, the livery stables, the opera house, and other enterprises. So my grandmother had a good start in life, at least from a financial standpoint. My mother [Leona Natalie Lee Born] was one of ten children. She went to Michigan State University in home economics and met my father there and married him when she graduated in 1911.

Hughes: Was that unusual for a woman to go to college in that era?

Born: Yes, it was unusual, but it wasn't startling. She got her teaching credentials but never taught. She was married and had children, so she never had the time nor the need to work.

Hughes: Well, now how about your parents? Can you tell me something more about them?

Born: My mother was about five years younger than my father. We lived in the Middle West throughout most of my life until I got into graduate school. I was the second of three children, and my sister, Norine Born de Crespo-Ordonez, was the oldest one in the family. We had any advantage that we wanted, in the sense that my mother was a very enterprising woman, and if anybody had an idea they thought was a good enough idea to vocalize, why then, she thought it was a good enough idea to promote. She was a very active person. We had really quite a free upbringing. For example, the oldest one in my family, the sister, then 16 years old, wanted to go to Spain to school, because she was thoroughly interested in anything and everything Spanish at that time. My father wouldn't let her go because there was a lot of unrest there prior to the Spanish Civil War. She was in high school, and my mother thought if she can't go to Spain, why not Cuba. So she went to Cuba instead. So if we had things we wanted to do we could do them.

Hughes: For example, when I was a senior in college, I said one time at Christmas, "Our close friends are going to Russia to visit their uncle, the American ambassador, and want us to join them in Europe." That was in 1936. And my sister says, "Yes, we could go to Spain while they are in Russia." And my mother says, "All right, why don't you do it?" So we did.

Hughes: Was some of this because it was her money, or was she given this prerogative by your father?

Born: It was both. Money wasn't all that free at that time, but she could make it stretch. So she could do what then other people couldn't do. We had a solid financial background, but not plush.

Hughes: It sounds as though she made most of the decisions, about the upbringing of the children anyway.

Born: I think she did.

Hughes: Was your father handling the business side?

Born: Well, he was less aggressive as a personality, very much so. He was always very tied down with his job motivations. He was not as active within the family as my mother was.

Hughes: Did this freedom in respect to what you could do also apply to behavior? What about discipline?

Born: Oh, we were expected to behave responsibly and understood an underlying family discipline. These were matters we didn't really talk about, except with respect to drinking alcoholic beverages. Alcoholic beverages were absolutely taboo. That's the only restriction that we ever had. If we ever touched alcohol we were told we might as well not plan on any financial help from the family to go to college. That was my mother's dictum.

Hughes: Was that a religious thing?

Born: No, it was a moral conviction. Her mother, my grandmother, had the same strong feeling. She owned business properties in Flint that she had inherited from her father. In leases [she would stipulate] no liquor was to be served on the premises. There were a lot of people that were against the use of alcohol prior to 1917, and those were the people that voted for the Volstead Act, prohibiting the use of alcohol in the United States. It wasn't tied in with religion; it was cultural and moral.

Sister and Brother

Hughes: Tell me a little bit about your sister and your younger brother. What was their education and what are they doing now?

Born: Well, my sister is living in Madrid, Spain, and she's married to an Ecuadorian.

Hughes: And your younger brother?

Born: My younger brother, Frank Born, who was three years younger, died in '75. He graduated from the University of Wisconsin Medical School and spent most of his professional life in Europe and the Middle East.

Hughes: Did he precede you in medical school?

Born: Yes, he preceded me in medical school by four years. All his medical books were around, and that was a further stimulus to my decision to go to medical school.

Hughes: The idea of medical school was something that evolved after law school?

Born: I think I always had the desire to go into medicine, but I hadn't taken any pre-med courses. I think what scared me was that you had to work with cadavers in your first year of medicine, and that didn't seem like an aversion that I could overcome. So that's why I didn't plan earlier [to go to medical school].

Hughes: So law school in a sense was a second choice.

Born: Yes. It was a choice that was dictated by reason of the fact that I wasn't prepared for anything else. There was further a family feeling, particularly on my mother's part, that I should be a lawyer, "since your grandfather was a lawyer."

Hughes: Had you been close to him as a child or young man? Do you think there was a direct influence there?

Born: No, because he died in 1923, when I was eight years old, and we never lived close to him. However, I had been raised to honor his professional integrity and accomplishments as goals.

Hughes: Did your father have any feelings about what he wanted you to do?

Born: Never. He really just expected that we would all go to college: that was a matter of course. He always felt the individual should make his own choice of what he wanted to do. So there was no vocational guidance coming from that direction.

Hughes: And you never felt interested in engineering?

Born: Never, never. That would be the furthest thing from my mind.

Hughes: [laughing] Could you tell me something about what family life was like? What did you do together, and how close were you to your parents and to your brother and sister?

Born: I think we were three individualists, my brother, my sister, and myself, in that we each went our separate way in everything. There was three years' difference in age between each one of us, which probably made the difference. If you were three years younger, you were in the way. I was in my sister's way, and my brother was in my way. So we each went our own ways; we had our own friends. We lived together harmoniously in the sense that there was never any major dissension. In those days the things you did as a family were really quite simple. It meant going to church on Sunday, taking an automobile ride on Sunday afternoon, picnics, summers at our lake cottage and things like that. In our family, there was no night life.

Hughes: What about your relationship with your father? Was he available to you?

Born: Yes, he was available, but we never communicated very well. As a matter of fact, I don't think I really got to know him until I had grown up.

Hughes: Would you say, then, that your mother was probably the more dominant?

Born: Oh, yes, there was no question about that. She was the more dominant of the two. She would make her own decisions with respect to [her] business matters and my father would accede to her wishes in most other matters. We'd always spend all summer with relatives at a compound of lake cottages maintained by my mother's family. My father would come out only on weekends. And so, he was actually somewhat isolated from family life, both by reason of circumstance, and also because I think he preferred that my mother made decisions.

Hughes: And he had a wife that was very capable.

Born: Oh, extremely. And also a champion of causes.

Hughes: Who would you say was the most influential person in your childhood?

Born: Oh, my mother, no question.

Hughes: Anybody outside the family that you can think of?

Born: Oh, we were strongly motivated within the family. But outside of the family? As a child, no.

Religion

Hughes: What about religion? Was that a strong force in the home?

Born: Both my father and mother were Roman Catholic but questioned the wisdom of celibacy in the clergy and birth control.

Hughes: Were you as children expected to go to mass every Sunday?

Born: Yes. We were expected to go, and did. As a young child I remember we also went often to services at a nonsectarian community church.

Hughes: Were you living in basically Catholic communities?

Born: Oh, no, the Catholics were a minority group.

Hughes: Your father's side was German?

Born: German Catholic. They came from an area in Germany that was about 15 miles from Heidelberg. His great grandfather was described in his birth certificate, in this little town in Germany, as being a "Landmeister," which is a fancy word for a farmer who owns his own land.

Hughes: How frequently were there visitors in the home?

Born: Not very often. My father was against having any social activities during the work week, because all his energies were directed towards his work. A part of this was due to the fact that when I was about 12, he had a very serious illness, a generalized septicemia, and at that time there were no antibiotics. He was hospitalized for over three months. It wasn't known whether he would live or die. After that illness his strength was limited for a number of years. So that was one of the reasons why there weren't many people in the home.

Hughes: It sounds as though you did quite a bit of moving around as a child. What did this do to your schooling and your friendships?

Born: Well, the moves were relatively frequent, so there was no way that you could keep track of your early friends. I don't have any knowledge of what happened to the early ones.

Hughes: Do you remember being upset about this?

Born: No, it was understood that where my father went, we went.

Politics

Hughes: What about politics?

Born: As far back as there was a Republican party, [my relatives] were all Republicans. That's for sure.

Hughes: You spoke of your maternal grandfather being very much involved in community activities and politics. Was this true of both sides of the family?

Born: No, on the other side, it was a different situation, because they lived in a small German community which stayed German; it never enlarged. They were simple people, and simple people they stayed.

Hughes: Did your mother's interest in causes have a political overtone?

Born: No, it always had a humanistic overtone.

Grammar School

Hughes: Let's turn to your schooling. Can you remember your first grammar school?

Born: I was large for my age, so I started kindergarten at the age of four. Apparently, I was a handful around the house, so the best way to get rid of me was to put me in school. I guess I was a problem in kindergarten. That was in Pontiac, Michigan. We lived [in] several different places in Pontiac, and I went through the third grade in Pontiac at the McConnell School. Then we moved to Detroit, Michigan, and I went to a parochial grammar school there for three years. It was all very dull, and catechism classes were the worst.

Hughes: Do you remember being interested in any subject more than any other?

Born: No. At that time it was straightforward textbook education. It was something that was rammed down your throat, and you had no say about it.

Hughes: Did you do fairly well?

Born: Yes. It must have been sixth or seventh grade when we moved to Chicago.

Hughes: Can you give me an approximate year?

Born: [pause] If I went there in sixth grade, then I would have been ten or eleven.

Hughes: So '25, '26?

Born: Yes.

[Tape 1, side 2]

Hughes: Can you remember anything particularly outstanding about grammar school years?

Born: Well, the grammar school years were just rote [learning]. My main interests were outside of school.

Hughes: What sort of things?

Born: Oh, I'd take classes at the Chicago Art Institute, and...

Hughes: This was in high school now, or in grammar school?

Born: Grammar school and probably the first year or so of high school. And then, stamp collecting, haunting the stamp dealers at every opportunity.

Hughes: Any sports?

Born: No. I was never involved in sports, neither as a spectator nor as a participant in sports, because I was never very good.

High School

Hughes: Where did you go to high school?

Born: My first two years of high school I went to Lakeview High School in Chicago, which was an old high school on the north side. Big. Not innovative at all; nothing was innovative in those days.

Hughes: So you were still bored?

Born: Still bored. And the only thing that would relieve boredom would be a good teacher. And I think the only teacher that sparked me with her teaching ability was one in French.

Hughes: And the last two years of high school?

Born: The last two years we were in Dayton, Ohio, and I went to Steele High School, which was right downtown. There were interesting people, interesting teachers. I think one of my most interesting teachers was a Dr. August Foerster who was supposed to teach physics, but he never taught any physics, because he was a paleontologist. He had a Ph.D. in paleontology. Instead of teaching physics, he'd talk about science generally, much of it in biology, which fascinated me. He expected that his class could learn any physics they needed out of the textbook.

Hughes: Were you, at that time, especially interested in the sciences?

Born: Through Dr. Foerster, yes.

Hughes: Had you decided anything about what you wanted to do eventually?

Born: No.

Hughes: Did you do reading on your own?

Born: Yes. In our family we were all great readers. We kept the public libraries busy.

Hughes: Did you have any particular interests or preferences in reading?

Born: I'd suppose the direction was towards classical literature, and that we read. Lots and lots of it.

Hughes: Could you summarize your feeling about your early education? How did it compare to what other people were getting?

Born: I think that the education at that time was extremely stereotyped. My teachers all had complaints to my parents that I would never be attentive. Their general feeling was that I would learn things faster than the other students and then would become rapidly bored. They wanted me to skip the fourth or fifth grade, and my parents wouldn't allow it, because I had started school at four years of age and was already younger than my classmates. Teachers in grammar school were always very unhappy with me.

Hughes: Because you weren't living up to your potential?

Born: Well, as far as the grades were concerned, I'd get A's, maybe an occasional B, but they didn't feel that I was interested. I'd disrupt the other students by being bored or not being attentive.

Hughes: You did well all the way through high school as well?

Born: Yes.

Hughes: When did you graduate from high school?

Born: I graduated in June 1932 at age 16.

Ohio State University

Hughes: What about your decision to go to college?

Born: The decision as to which college to attend was rather haphazard. My parents would really have liked me to have gone to the school to which they had gone, Michigan State University. However, I kept putting off any decision as to what school I was going to go to. Most of my friends were going to Miami University in Athens, Ohio, so I finally sent in an application there, even though school had started two days before. They accepted me anyway, so I went down there, and I looked around for a place to live. The dorms were filled. I took one look at a run-down rooming house and decided I wasn't going to live there. Then I systematically looked to see what the latest college opening in the United States was, and that was Ohio State University. So that was basically how the decision was made.

Hughes: What was your parents' feeling?

Born: Well, that it was my decision. They had let us make our own decisions pretty much all the way through.

Hughes: Did you have any idea about what you wanted to get out of college?

Born: No. It was [just] expected that you went to college.

Hughes: Your parents were supporting you?

Born: Yes.

Hughes: Did you have any jobs at all as an undergraduate?

Born: No.

Hughes: What about your major? When did you make the decision, and what was it?

Born: My major in college was political science. My minor was economics. I was drifting into law, so I thought political science was probably the thing to major in.

Hughes: Was it your mother's influence that made you consider law?

Born: Well, I knew it wouldn't be engineering. And there were lawyers in the family. There were no doctors. If you wanted a professional life, you had to take law, medicine, or engineering. I never liked the idea of working for others. I always wanted a life where you would have some kind of professional independence.

Hughes: Do you remember any faculty member in your major with whom you had any particular relationship?

Born: Well, I didn't really have any close faculty connections that influenced me greatly. Political science was a very strange thing in those years. The "in" thing at that time was to be a Communist and belong to a cell. Most of my political science class belonged to the Communist party and had a political cell. They held secret meetings, but they never invited me, so I was a little put out!

Hughes: You didn't think of yourself as a conservative in those days?

Born: Oh, no, but I guess they thought I was so conservative that they didn't want to be near me. As a matter of fact, in those days I suppose I was a conservative, because one of the people whom I shied away from completely and who later became a very good friend of mine, was politically probably the "worst character" on the campus, in the sense that he was the leader in all the campus protests. [He] was causing more trouble politically than anybody else. He was a fellow by the name of Robert Hare. Both he and his sister were strong Communists, despite an affluent background. I got to know him after we had left Ohio State University.

Hughes: Would you describe Ohio State, then, as a very politically active campus in those days?

Born: It was [active] in the political science department.

Hughes: Do you think it left any lasting impression on you?

Born: No. I don't think it bothered me, except they didn't invite me to any meetings! I was more interested in finding out things, because I really had no pronounced political views, though I'm sure they must have been conservative.

Hughes: What was the reputation of the political science department from the academic standpoint?

Born: It was considered an excellent political science department.

Hughes: And do you remember your class standing?

Born: I don't think that I was a star in political science. My first two years at Ohio State, I had probably about a 4.0 average. The second two years, I didn't see any sense in pushing hard, and so I probably went down to 3.2 or 3.3 grade point average.

Hughes: Were you doing other things?

Born: Oh, I was having a very good social life, I can tell you that!

Hughes: Did you have any campus offices, or were you a member of any particular group or organization?

Born: Oh, I think I was in various campus things like [the] yearbook, as well as social and honorary fraternities.

Hughes: Was there anybody that had a particular influence on you in college years?

Born: No, I went through college as an accepted step in education, and I never got turned on, I never really got turned on.

Hughes: Does this hold all the way through law school and medical school too?

Born: Oh, medical school was completely different.

LAW SCHOOL AND THE PRACTICE OF LAW

Hughes: I'll get to that in a minute. Well, let's turn to law school. Was there any particular decision involved in this?

Born: It was a little more planned, because it was felt in our family that if you went to law school, you should go to the best. So I went to Harvard Law School for my first year. And that was a rude awakening, because you had to work. I enjoyed Harvard, but I don't think I really saw law as something that was great, but I had started it. My mother came down with tuberculosis [in 1936], so it was best that I be close at hand. So then I transferred to the University of Wisconsin and lived at home.

Hughes: What was the reputation of the law school?

Born: It had a good reputation, because all the faculty were Harvard Law School graduates.

Date of Interview: 16 February 1979

[Tape 3, side 1]

Born: I finished law school in 1939. [After graduation] the state of Wisconsin [required] individuals either to take the bar examination or to put in six months clerkship in a law office. At that time almost everyone went in for the office experience.

I went with a firm in Madison, Wisconsin, by the name of Wilkie, Tobias, Hart, Kraege and Jackman, which was one of the larger firms. Its primary business was corporate law and representation for various insurance carriers, including the malpractice carriers, and a considerable amount of lobbying for the beer industry and for the Wisconsin dairy industry.

It was a very sedate firm. Our offices had two floors in a building in downtown Madison, and the upper floor consisted of offices and a very fine library. I was very much interested in the medical aspects of the library, and so spent a good bit of time there, either looking up law relative to cases that we were working on, or else in spare moments just reading through the textbook type of medical books.

Then the war broke out, and the attorney general, who was then a man by the name of John Martin, asked the senior partner in our firm whether he had someone who would be willing to serve as assistant attorney general. And so I was asked. The basis of my going was so that our office staff could gain further expertise in the workings of the attorney general's office and keep up all the [favorable] connections there. So I was on loan to the attorney general's office and went over there full time. My primary responsibilities from the legal end were to serve the state in all matters relative to state escheats. The war was going on and [Congress enacted] the Alien Property [Law which added considerably to my duties]. There was quite a bit of rivalry between the federal government and the state governments as to whom should claim the [properties] that belonged to enemy aliens. The state felt that it had the first right, since the assets were within the state, and the federal government felt it was its right.

My job was to make sure that the state got every bit that it could get. I enjoyed this work. So that, [as well as] the writing of attorney general's opinions, was my main function. The writing of attorney general's opinions is a function of the office which is carried on in most states. [Elected] public officials and people holding state jobs as heads of departments, and so forth, can request [from] the attorney general an advisory opinion on a legal matter in which there's no settled legal opinion. The attorney general would have parceled out to the assistant attorneys general these questions, and they would write the opinions. Then they would go back to the attorney general; he'd go over them, make any changes or additions that he wanted; and then they would go out formally under his name [to] be published as the attorney general's opinion. They would be the lowest order of law.

[While I was assistant attorney general,] I served on the Dane County Board of Supervisors, which was an elected office. My main function as the supervisor from the village of Shorewood Hills, as far as the village was concerned, was to protect the country club against taxation. But while on the board of county supervisors, I became further interested in health matters by serving on the public health committee, which had charge of all county institutions dealing with health care delivery. This committee made policies and had quite a bit of authority in running [county health institutions]. I stayed [with the attorney general] for several years, and while I was there I was not particularly happy with the prospect of spending the rest of my life in the law business. I was interested in changing to an area that would bring me more personal satisfaction.

MEDICAL EDUCATION

Born: The reason that the law business was not particularly satisfactory was that the primary responsibility was to the client, to protect his interests, whether they were economic or whatever. The relationship between a lawyer and his client is vastly different from that of a doctor and his patient. The client is only interested in protecting himself and his own position, and so he presents any kind of a story that he believes will give you as his attorney something to fight on, whereas a patient is honest in what he tells his doctor because it's his health that's at stake, and he's interested in getting medical assistance, and so he or she's going to tell you the truth. It's a much more satisfying relationship. My brother had finished medical school a year or two previous to that, and I knew that I too should go into medicine.

Hughes: This is maybe 1942?

Jean Louise Chapman

Born: This is about '42. I had also met the woman who is now my wife [Jean Louise Chapman]. She had been a medical student and was asked to drop out so that she could be an instructor in neuroanatomy and histology. This also entered into my decision. It seemed a simple matter just to pick up and start into medicine.

Hughes: When did she get her M.D.?

Born: Well, she got her M.D. in '46.

Hughes: So there was one year when you were both in medical school together.

Born: Yes, that's right.

Hughes: Did you do much interchanging of notes or talking about medicine?

Born: Yes. At first I was working off pre-med requirements, so I had to take all of the chemistry, physics, and zoology [requirements]. During that period, I had a lot of tutelage from Jean. It was very important to get top grades to get into medical school because there were only a limited number of openings for civilians. The primary openings were reserved for the army and navy programs which put servicemen through medical school.

Decision to Attend the University of Wisconsin

Born: The dean of the medical school had outlined the courses that I would have to take and was not happy at all at the prospect of my changing professions and going into medicine. He seemed to have the conviction that I would pull strings to get in, because the senior partner in our law office was a regent of the medical school, [and] like some academic people, [he] was a little suspicious of the board of regents interfering with the academic functions of the university.

Hughes: When did you marry?

Born: [In] '46.

Hughes: Do you think that was any consideration at all of the fact that your wife was either in or just recently graduated from medical school in considering your case?

Born: No, not with the dean. Dean Eyster was not a friendly type of person. He was acting dean at that time. The regular dean of the medical school was William S. Middleton, who was chief of medicine for the European theater of operations during World War II and was on military leave. Eyster was a physiologist; he was head of the physiology department, a man nearing retirement. He had the conviction that I would never go through with the year and a half of pre-med, but I did show up a year and a half later in his office much to his surprise and somewhat to his dismay. There was nothing that he could do, because admission was solely on a competitive basis of grades.

[Return to tape 2A, side 3]

Hughes: Were you financing your medical education?

Born: I was financing it until I got married, and then I borrowed the money from my father.

Hughes: Had you any idea about a specialty?

Born: No. I just wanted to get into medicine. I saw in the attorney general's office that law was going to be a lifetime of automatically getting more and more income, getting up at 7:00 or 8:00, playing golf before going to the office, and going through the day, and then going through the months, the years, the steady increase in salary, the comfortable life, nothing really of any merit, of any value. That would be a waste of a lifetime. So that's why I left. That's why I went into medicine.

Hughes: Would you say, then, that it was a combination of interest and, perhaps, humanitarianism?

Born: Well, I think there was always a strong element of humanitarianism. But it was more an awakening to the fact that you had a life ahead of you, and you had to, somehow or other, justify your life and make it contribute to something. It didn't matter what, just so long as you contributed and felt your contribution was worthwhile. It was less important what you actually did than what the degree of satisfaction was.

Hughes: Did you consider any other school aside from Wisconsin?

Born: I did consider briefly the University of California. That's because I had a friend out here. But I was more interested in going to Madison because the professors that I had in the medical school were all people that I knew; they were neighbors, they were social acquaintances, they were friends, and an awfully good bunch. And so I entered medical school in January 1944 knowing most of them through my wife or my brother or somebody else. By the time I actually got into medical school, the old acting dean [Eyster] had gone. Our returning dean was a man by the name of Middleton. He was an outstanding clinician.

Hughes: You say they were a good bunch. Do you mean medically or in a more social sense?

Born: No, I mean from a professional standpoint. In the preclinical years, of course, the staff were all people that had to spend full time in teaching and research. Most were widely recognized in their field. I would say the preclinical years were outstanding.

Hughes: Were there more medical students in each class because of the war?

Born: No. There were about 75 in ours, which was normal.

Hughes: I thought maybe they increased the enrollment to allow more people to get through.

Born: No, because they couldn't expand the facilities.

Hughes: What was the reputation of the medical school at Wisconsin then?

Born: Overall it was a good medical school and would probably rank in the top 10.

Hughes: Did you do well?

Born: Yes.

Hughes: Did you have to work to do well?

Born: It never seemed like work.

Medical Curriculum

Hughes: Was the medical curriculum fairly standard: two pre-clinical years and two clinical years?

Born: It was essentially the standard curriculum that had been used for 40 years throughout the United States.

Hughes: Did you feel that you were getting good instruction and good clinical training?

Born: I was getting very good instruction. Of course, there was a strong grounding in the basic sciences of medicine. For example, in anatomy we would spend four hours a day, four days a week for an entire year working on anatomy alone.

Hughes: How did you do with the cadaver?

Born: Fine! It never bothered me at all.

Hughes: Do you think that strong training in anatomy has served you in good stead? Do you find you have used it very much?

Born: I wish I remembered all of it. If you don't work with it, you forget it.

Hughes: Were there any really outstanding people on the medical faculty in those years?

Born: Well, there were some 8 to 10 outstanding people who were internationally recognized in their fields, [especially in] the areas of biochemistry. The quality however was not uniform. The great biochemists of the University of Wisconsin, like Conrad Elvejem, were not on the medical school faculty.

Hughes: Did you have any interest in research at that time?

Born: There was very little research to which we were exposed at that time, because it was war.

Hughes: I believe that the historian of medicine, Erwin Ackerknecht, was at Wisconsin about that time.

Born: Yes, he came in my junior or senior year. I graduated in '48, and I believe he taught a first or second year course.

Hughes: I believe history of medicine was an obligatory course, but you had no such thing?

Born: It wasn't then. The history of medicine was added [later].

Hughes: What were you thinking about a specialty by now, the later years of medical school?

Born: Well, I was always inclined towards surgery. Surgery was of more interest to me, because it was more active and outgoing. You could see fast results in patients. You could see things happen. Patients got better.

Hughes: Were you pretty good with your hands?

Born: Yes. When I got into an internship, I decided I had enough coordination to be able to tie knots and do things like that.

Hughes: Were there any particularly influential people during your medical school years?

Born: Oh, I think the dean [Middleton] was very influential.

Hughes: Did you spend social time with him?

Born: To a limited extent, but he had a keen mind and a sharp wit which made him not an easy person to be with. He also had authoritative demands on the students. Our classrooms were on the sixth floor of the hospital building for the clinical years, and he wouldn't allow any student to take the elevator up. No student could be caught chewing gum, and no student could be caught with the cuff of his pants above the level of his shoe. He had a nickname for everyone and used it consistently. He felt that two things in medicine were important: one of them was the prevention of disease, and the other was research. Those were the two things that he thought were of permanent value in medicine despite his being a great clinician.

Hughes: And did those two things have an influence on you?

Born: Yes, I never forgot them.

Hughes: Well, when you spoke of him being influential, was that in respect to those two things?

Born: Yes. He was such an outstanding person that if you admired him, you also admired his values, and most seemed to make eminent good sense to me.

Internship at Highland Hospital

Hughes: Was the next step Highland Hospital in [Oakland,] California?

Born: Yes, the next step was Highland Hospital.

Hughes: How did that come about?

Born: I asked my wife where she would like to be. She was a physician at this point, working at Student Health Service at the University of Wisconsin. We decided we would come to California; I had never been here, but she'd been out here frequently because she had an uncle on the faculty at UC Riverside, California. So we just decided that we'd come to California.

Hughes: For good?

Born: [Yes, and further] she was practically assured of getting a job out here at the Student Health Service on the UC Berkeley campus, which she did get, and has been there ever since. There was no other thought in my mind except to the Bay Area.

Hughes: Why Highland?

Born: Primarily because it was near the Berkeley campus and the University of Wisconsin Medical School considered the Highland Hospital internship to be good. I spent one year as an intern, and then I went into a general surgery residency, and stayed there for another year. But by this time I was thirty-five years old. We had our first child, and I thought I'd better make a break and start earning some money. In that era residents were given a stipend but no salary. The surgery residency would have taken three more years because I probably would have gone into orthopedic surgery.

Hughes: And you were an assistant resident during that time?

Born: Yes.

Hughes: Is there anything particular to say about your residency at Highland?

Born: Well, I wouldn't consider that it was a good residency at all. It was very mediocre, the reason being that you operated almost independently without much supervision except from the resident staff. The staff of attending physicians was poorly organized, and you couldn't even rely upon some of them to come out if you needed them. I always felt uneasy about neurosurgery. There were only a couple of neurosurgeons in this part of the Bay Area, and we'd call them, and they'd find every reason why they couldn't come out. You missed the benefits of being in a teaching hospital.

Hughes: You have no regrets about the decision to leave surgery?

Born: No, I don't. [The staff at Highland Hospital] wanted me to go into the orthopedic residency, and so there was some pressure put on me to stay there in orthopedics, but I thought I'd better get moving.

[Tape 3A, side 1]

THE UNIVERSITY OF CALIFORNIA

Hughes: What were the considerations that went into your decision to come to Donner Lab?

Born: I came to Donner Laboratory in a slightly roundabout fashion. After finishing a year of surgical residency at Highland General Hospital, I took a job with Kaiser Permanente in Oakland and ran their emergency room at night from 5:00 until midnight.

William Goodricke Donald, University Physician

Born: During the daytime I worked at Cowell Hospital. Dr. William Goodricke Donald, who was university physician, was in charge of student health on all campuses of the University of California. This was still a single university in which the president, Robert Gordon Sproul, was collectively and individually the head. There were no chancellors on the individual campuses. There was just the president, and everything was run from Berkeley, including all the student health services for the other campuses, [UC]SF, UCLA, and Davis. And so Dr. Donald was responsible for those campuses also.

My wife had been working at Cowell [Hospital], so I got to know Dr. Donald through her being a physician on the student health service. Dr. Donald was very interested in starting an occupational safety and radiation safety program within the University. He asked me if I would help him set up this program. He maintained that the University of California was the largest diversified industry in the state and that a greater variety of toxic materials, both standard and experimental, were used [there] than in any single industry. I helped set up the program and then was the physician in charge of the program. After [I had been] working with him for six or eight months, Dr. Donald approached me. Would I be interested in replacing him when he had to retire as university physician? He was then a man in his early sixties, and thought that this might work out very well. He had loved his function as university physician. Dr. Donald was a very close friend of President Sproul and was also a good friend of Dr. John Lawrence's. Dr. John Lawrence came to Dr. Donald and said, "Do you know of some doctor who might help me at Donner Laboratory? I need help in the laboratory generally." And Dr. Donald said, "Well, I have a very good man working for me. He's got a law degree and a medical degree." That interested Dr. Lawrence very greatly.

Hughes: What specifically was Dr. Lawrence looking for?

Born: He was looking for someone that could be responsible to him to help administratively, to handle problems in the laboratory.

Hughes: It wasn't an extension of the radiation safety program that you had been working on?

Born: No. What made the radiation safety and occupational health program interesting to Dr. Donald was that we found a lot of defects in the laboratories in LSB [the Life Sciences Building] which were having what we thought at that time were physical consequences on the health of the researchers there. It was probably the most unsafe building in the world from the standpoint of the use of solvents. Carbon tetrachloride and benzene were used heavily at the time. And few of the modern safeguards existed in LSB. This started an investigation of the physical aspects of the building. There wasn't adequate ventilation; there wasn't anything [comparable to] the modern-day fume hoods and traps in the drains. People would pour carbon tetrachloride or mercury into the sinks, and it would sit there in the drains, and the fumes would come up. The university put considerable money into fixing up LSB, some one and a half million dollars. At that time it was a lot of money.

Hughes: This was a nationwide problem, simply that people were not aware of the hazards?

Born: It was a nationwide problem. This is what established the bond between Dr. Donald and myself: our mutual interest in correcting some of the problems that existed within the university, affecting the health and safety of some of the people working there.

Decision to Work at Donner Laboratory

Born: At the time that Dr. Lawrence talked to him, which was October, November in 1951, Dr. Donald called me in and he said, "Well, Jim, I think that there'll no longer be a university physician after I leave. The university is heading for autonomy for each of the campuses, and they'll have their own setups. I don't know that it would be even a good place for you to be. John Lawrence is going to make an offer to you if you and he seem to get along. I don't advise you staying on here with any expectation that this job that I have will be worth anything in the future."

Hughes: Did it disappear?

Born: Yes.

Hughes: Then who became responsible for the general welfare of this campus?

Born: Then there was just a director of student health at Cowell Hospital, and each campus had its own director of student health and its own occupational safety division. When Dr. Donald had that job, it was one of the most highly respected jobs in the university. The university was quite different at that time. It was run by people who had been established within the university for a long, long time, and it was a central operation. As it grew, different patterns had to emerge in order to take care of a new set of problems. The concept of a multiversity envisioned by [Clark] Kerr was becoming a reality. So the result was that Lawrence got in touch with me in November, and then I made the decision to work with him.

Physical Facilities at Donner Laboratory

Born: At that time there were a lot of things in the works at Donner Laboratory with respect to expanding its physical facilities. We had only the one building, and that housed all of our activities. Formerly this building had been building number one, I guess it still is, of the Radiation Laboratory because it was here before there were any other facilities for the laboratory's administrative staff. Right after the building was built Ernest Lawrence and his group had offices down here as well. Our animal quarters were several rooms at the Gayley Road end of the third floor of the building. Our research [facilities were] all in one building, which is vastly different from what it is now because we're all over the place.

At that time we were filling this small building beyond its capacity, so my first offices were in a temporary World War II building on the Mining Circle where the new mathematics building is, and there are still some old wartime buildings behind it. These are wooden buildings which were painted green then. [John] Lawrence's offices were in Donner Laboratory on the first floor. He had two small rooms down there.

The first thing that we had to do was to have more space. On our research staff here we had several M.D.'s who were outstanding in their field, and many of the studies that we carried out were metabolic studies. These metabolic studies would require keeping the patient over a period of two or three days so that studies could be done around the clock. So it was essential that these [facilities] be close to Donner Laboratory. Dr. Donald had made available a few rooms for us at Cowell Hospital, and we were thus able to [do] long-term studies on patients with diseases in which we were interested. We still needed more room. The student health service hospital, Cowell Hospital, was heavily utilized at that time because students were [admitted] if they had a temperature over 99.6, and kept for days and days. The student health service acted *in loco parentis* and felt a great obligation to the parents to take care of their children well. So there was need for us to have bed space that would be our own, that we could always count on for patient studies or patient care.

Hughes: Had it been very catch-as-catch-can before that, because things like neutron therapy had been going on since the late '30s?

Born: There was no facility for taking care of [neutron therapy patients] over here.

Hughes: That was all done in San Francisco?

Born: Yes, and that was a totally different kind of an operation.

Hughes: So when you got into the high-energy particle business, it became a problem with hospital [space]?

Born: Yes, there [were] patients treated over here by one of the early cyclotrons.

Hughes: Yes, on the 37-inch [cyclotron].

Born: Patients were treated on the 37-inch, but those were patients from across [San Francisco] Bay, and they weren't kept over here: Dr. Robert Stone and Dr. John Lawrence were on the staff of UCSF. The patients would be brought over here and then transported back. There was not much of any facility here in those days. As a matter of fact, the first part of this building [Donner Laboratory] wasn't built until '42, and those studies were prior to that time. There was really nothing except the Old Radiation Laboratory, which was an ancient wooden building that stood where the new chemistry building is. The Old Radiation Laboratory was just a wooden shack with a shingle roof. I don't think there was even any heat in that building, and there was the more recently built Crocker Laboratory.

Dr. Born's Responsibilities

Hughes: Would you say then that the need for a person such as yourself to help with the administration was largely looking to the future expansion into high-energy particle therapy?

Born: Not at that time, because we hadn't done any patients; we didn't do any patients till 1954 on the 184-inch cyclotron. But at that time we were very active in the blood dispersions, in the investigation of polycythemia, the chronic leukemias, the anemias, things like that. The staff here was working out the techniques utilizing radioactive tracers [for determining] iron metabolism in the bone marrow, spleen, liver, and other organs. Our staff devised the equipment for counting and measuring radioactivity, and this gave rise to the iron studies in human beings, measuring the turnover of iron in their body—all those techniques that are necessary to obtain a basic understanding of blood diseases, of the production and destruction of red cells in health and disease.

Hughes: Did you immediately have a part in that?

Born: Well, I was assigned a part which I never undertook. Dr. Lawrence thought I should start out immediately working out on a technique called the Ashby technique for measuring red-cell lifespan. It was a very cumbersome technique that had been established elsewhere five or ten years previously. I never was enthusiastic about the idea and found ways of occupying myself with other things so I wouldn't have to get involved in that.

Hughes: Were your main responsibilities administrative?

Born: Mainly they were administrative. But medical as well. All of us [who] were physicians spent time working with patients [because] Dr. Lawrence felt that every physician here should keep his hands in medical problems through dealing with patients, and that would keep his enthusiasm up [for medical] research.

Hughes: What did you get into if you managed to shirk the Ashby business?

Born: Well, I got into the area of patient care primarily and the investigation of hematological disease. In this I was a researcher, but not a scientist. There is a distinction. A researcher can work with statistics, with patient data, with anything else, but a scientist is one who's going after the basic information through devising his own research protocol and [doing] his own benchwork. Dr. Lawrence felt that any true scientist worth his salt had to do benchwork.

John H. Lawrence

Hughes: In which category would Dr. Lawrence place himself?

Born: Well, that would be a curious one, because he straddled about three or four areas. He did do a lot of benchwork in his early days.

Hughes: Administration would be a large part in his case.

Born: Yes, but this was a burden he wished to reduce.

Hughes: But would the second segment perhaps be researcher as opposed to scientist?

Born: Well, Dr. Lawrence, he's a curious.... I shouldn't say curious, but a very interesting mixture of capabilities in that he could do *many* things and do them all well. He was a researcher, scientist, and enterprising director. And one of the factors that was very important to the production of scientific knowledge was his ability to pick researchers in areas that he thought needed further investigation. This laboratory was very productive because he picked the right people and directed the general area of work which they were to do, but allowed them a great, great latitude in developing themselves as scientists.

Hughes: Would you say then that his method of recruiting people was to try to find a good man to fill a need already existing at the laboratory?

Born: That's right. His primary approach was to identify the area where he needed someone and then look for someone—with the exception of students, because they were in a different category. If you were a student, you were in the process of [formulating your research interests]. If you were a young investigator, you already had certain lines of [research] interest. Dr. Lawrence was always a *strong* advocate of taking bright young people in. [But] no one had a stable position in the sense that there was a definite commitment to keep him; he had to prove his merit. Otherwise, it was understood that he'd move on. The main concern was to keep lots of bright young people coming and to find ways of supporting them, and it wasn't easy, it wasn't easy at all. And then to keep the best of them here in Donner Laboratory. You'll notice that most of the people that came here developed that way. Dr. [Hardin] Jones came as a graduate student, Dr. [John] Gofman came as a graduate student, Dr. [Cornelius] Tobias came as a graduate student.

Hughes: And that also I imagine is the reason that so few people at Donner Lab have degrees from elsewhere.

Born: Yes.

Hughes: I've counted, I think, three people [in Donner Laboratory and the Department of Medical Physics and Biophysics who have degrees from elsewhere].

Born: That's right. There were a great number of young people taken in, and the few that remained were the cream of the crop. Now, it may not be a good idea to keep so many of your own people, the people that you've degreed.

Hughes: Was that a conscious choice, do you think?

Born: It was not a conscious choice. We kept other people here for periods of time who were very responsible and very capable investigators—like Dr. Nathaniel Berlin and Dr. Rex Huff, who didn't get their degrees here. Well, I guess Berlin did get a Ph.D. in medical physics here [in 1949 at the University of California, Berkeley]. But that was sort of a different proposition, because they came here as physicians. There was a very great push on Dr. Lawrence's part to build up the Division of Medical Physics, so he was very interested in getting physicians to come here for a Ph.D. in medical physics.

Hughes: What was the reason for building up the division?

Born: He was thoroughly convinced that the medical sciences and the sciences basic to medicine, including the physical sciences, should be brought closer together, that there should be one body of knowledge.

Hughes: Were there problems with the medical school [in San Francisco] about this?

Born: Medical schools didn't offer anything but straight medical education at that time.

Hughes: There was no program in nuclear medicine or medical physics?

Born: No, not until much later.

Hughes: So there was no feeling that the Donner Lab was encroaching on medical school territory?

Born: Oh, there was a very great feeling there, and that feeling persisted for many years after I came here. There was definite antagonism between the [San Francisco] Medical Center and John Lawrence. It had to do somewhat with [the decision to locate] the medical school on the other side of the Bay rather than this side. There were a lot of components to it, none of which I very clearly understood, because they were extremely complex, involved a lot of personalities, and there were a lot of petty jealousies. Dr. Tobias would probably be able to give you the story on that. I just don't know the story, except that [antagonism] existed in avery real fashion.

Hughes: I know it's a very long-term problem.

Born: It seems to have ended within the last ten years. There's a new generation of people, and the old antagonisms no longer exist.

Current Medical Program at Berkeley

Hughes: I was going through the *Daily Cal* and was rather surprised to find that there is a small [medical] school on this campus.

Born: Yes, I was involved in that to some extent. The Chancellor [Roger W. Heynes] established a committee to study the possibility of a small medical school on this campus. I served on that committee; the decision of the committee was that we should go ahead. Chancellor Heynes fought strongly for this. [Chancellor Albert H.] Bowker carried on the same campaign and was able to gather together enough funds to get a melding of people, but not appointments that were funded separately by the state, and [to establish] a small medical school here that would serve 12 students. This was a matter of very great interest, and also a matter of quite a bit of controversy on this campus.

Hughes: What was the rationale for having [two] medical schools [in the same geographical area]?

Born: Well, it was thought that a medical student who became a doctor would benefit greatly from having a broader exposure to sciences, and that [Berkeley] would be the place to do it; that this was the fountainhead of learning: all your Ph.D. programs were over here, and a tremendous amount of very valuable research was going on here. [As a result] you could [train] a new type of doctor.

Hughes: A research-oriented doctor?

Born: Well, it wasn't to be research only, because it was to have a broad spectrum, because the social sciences [were] here [as well]. It was to develop a broader type of person, a wholistic type of medical practitioner—to have people that had broad backgrounds come into medicine. It was considered that this would be a unique opportunity for developing a different kind of doctor.

Hughes: When was all this occurring?

Born: This would probably be seven years ago. It was to be only a two-year school, and eventually, if it proved of merit, it was to be expanded [and] state funding [sought]. A very dedicated group of people on the campus pushed this strongly.

Hughes: Is it still a two-year program?

Born: Yes, but now it's state-funded; it's been recognized. The control has gone somewhat from our hands, and it's run jointly by [Berkeley] and San Francisco. I have no longer anything to do with it. I was on that medical school admissions committee for a year, and then I was chairman of it for two more years. We probably did what we set out to do: to pick people [with the broadest backgrounds] that we could possibly find. But I'm afraid all of them weren't good material, in the sense that their ambitions were greater than their abilities. We took people with academic records which did not support the promise of academic achievement in medicine, so we had some failures. Some very disastrous.

[Tape 2, side 2]

Hughes: Would you say that the program is doing well now?

Born: It seems to be doing well.

Hughes: Is the eventual hope to expand it and have a full-fledged medical school on this campus one day?

Born: Let me correct one thing that I had said. I've talked about the medical school, and we're really talking about a school of the health sciences, of which medicine is only one part. There are other parts to it.

There's genetic counseling which will [train students] to advise people in very sensitive areas and do it capably and in a way which will be of service to the individual and to society generally. There's an innovative program in mental health where, in cooperation with Mount Zion and UCSF, young people will be trained in mental health and work towards a Ph.D. They will be a practicing type of psychiatrist without the M.D.

The program is designed to give students greater exposure to health care problems and problems of health care delivery. The idea was that there are new problems that are emerging in medicine, in health care, in health care delivery, which have to be solved.

Reputation of Donner Laboratory

Hughes: Going back a little bit to when you first arrived at Donner Laboratory, could you tell me something about the reputation of the laboratory at that time?

Born: It had a very high reputation, especially internationally. You could go to any country in Europe and go to any center where there was medical research or science going on, and the name of Donner would open the door. It was very highly regarded, very well known.

Hughes: Was there any particular line of research that accounted for this fame?

Born: Yes, it all stemmed from Lawrence's work with P-32 in the treatment of polycythemia vera and also to the basic studies that were done here on blood cell formation and red blood cell kinetics. [People also] intimately connected [Donner Lab] with the cyclotron's production of radioisotopes which were used as tracer substances. We probably were the most important [laboratory] in the world [for] the use of radioactive tracers [in] the investigation of medical problems, [thereby] merging the physical sciences with [the] biological, using nuclear tools to do biomedical research.

Hughes: In the early 1950s when you were just starting out here, was it still unusual to have a multidisciplinary approach: to have clinicians working with mathematicians and physicists and biologists, et cetera?

Born: Yes, it was. One of the [accomplishments] that Dr. Lawrence prided himself on was that of bringing all these people together, not only the biochemists and physiologists into the medical field, but also the engineers, the mathematicians, and the physicists. This was definitely different. [Investigators] learn from one another, when they work close to one another. They are able to work out problems together—it's been very productive.

As an example, one might cite the case of Hal Anger. Hal Anger developed what is known throughout the world as the Anger camera. It's used in nuclear medicine for doing studies of [radioisotope] uptake in various organs. [It] gives you a scan of an organ, using radioactive substances as tracers. Hal Anger was an engineer with a bachelor's degree who came, worked with us, and had to pick up all the physiology, some medical expertise, some biochemistry, some radiochemistry. Our physicians worked with him so that he could understand the needs of medicine and how they could be met with his cameras. So he became this hybrid type of person.

Hughes: Was that true of you yourself to a certain extent too? Had you, for example, done any work with radioactive tracers?

Born: No.

Hughes: Was that fairly common, at least in those days, for people to come without any specific experience [in nuclear medicine]?

The Clinical Use of Radioisotopes

Born: Yes. [There] weren't many places where you could get that training. Hospitals didn't have nuclear medicine units; the first nuclear medicine unit, Dr. Lawrence claims, was the one that we opened at Highland Hospital.

Hughes: Yes, I was going to ask about that. That was 1950 when that opened.

Born: Dr. Nathaniel I. Berlin was instrumental in helping Lawrence open that.

Hughes: Was there somebody from the [Donner Lab] staff more or less permanently assigned?

Born: Yes, but not physically domiciled there. The instructor and a postdoctoral fellow would go back and forth and use a room there and then we'd send over some equipment that our people would need. And we'd send over the isotopes. We did, however, employ and keep a technician at Highland Hospital.

Hughes: Was that mainly diagnostic work or therapy as well?

Born: [Primarily] diagnostic. Therapy wasn't very far advanced except for the use of P-32 and the use of radioactive iodine for thyroid disease.

Hughes: P-32 was being used largely for polycythemia, is that not true?

Born: Yes.

Hughes: What about leukemia at that stage?

Born: Well, not in the acute leukemias, but in the chronic leukemias, lymphatic and mylogenous leukemia. P-32 was used because Lawrence felt that the bone marrow became engorged with the defective white cells and that by having all of these cells replace normal functioning marrow red cell production decreased; you get an anemia and you get a worsening of the disease. So he felt that you had to kill off some of these excess cells to keep the marrow as a functioning multipurpose tissue.

Hughes: Wouldn't some of the red cells be lost through the process too?

Born: Yes, they would be lost too, but not to the same extent. The primary effect of P-32 may be on cells that are more sensitive by reason of the fact that they're a little more immature.

Hughes: I know you've written a couple of papers with Dr. Lawrence and with Ruth Steinkamp on P-32 in connection with leukemia. This was a long-term interest of Dr. Lawrence's.

Born: That's right.

Hughes: How did you get involved?

Born: We had the clinic in this building, and in this clinic we would follow all of those patients that had been treated with P-32—the polycythemias, the chronic leukemias, a few [cases of] Hodgkin's disease and a few other types of cases. As a matter of fact, I still see some of the patients that I saw on the first day I was here.

Our interest was to find out what the long-term effect of radiation was on these patients, and what effect it had on their disease. It's been a continued process of evaluation. We would also take in new patients with the diseases which we were interested in for diagnosis evaluation [and] study. Our objective was to learn as much as we could about the disease that patient had. Where's the basic defect? How can it be cured? It was carrying on what

Lawrence had started.

Hughes: Were John Lawrence, you, and Ruth Steinkamp all more or less doing the same thing?

Born: I, of course, had worked consistently with the patients. Ruth Steinkamp was a hematologist, so she had a greater in-depth knowledge of hematology than I did.

Hughes: What was Dr. Lawrence's role in that [paper]?

Born: It was a subject that he was intensely interested in, and many of these were patients that he first treated. When a paper such as this was written in which he was not the first author, but in which his name appeared, he'd go over it carefully, and he'd make changes or additions or suggestions which we would incorporate. He was a very good critic, because he could improve a paper very greatly.

Hughes: From a scientific standpoint or more from a reading standpoint?

Born: From both, because if you increase its clarity from the reading standpoint, you're also increasing its clarity from the scientific.

Heavy Ion Irradiation

Hughes: What was your first research project?

Born: Well, I think the first research project outside of the work with the hematology patients came about when we started to consider treating patients with heavy ions in our pituitary irradiation project.

Hughes: Can you tell me how that all began?

Born: Yes. Animal studies for this project had been done up on the Hill by Dr. Tobias and Dr. Donald Van Dyke. They had done these on a number of rats because the rat pituitary is located in a very advantageous position. It was quite easy to irradiate [a rat] pituitary with a cyclotron beam because it's just hanging right down there; it's much different from the human pituitary which is located right in the middle of the skull.

Toby had done irradiation of the pituitary and the hypothalamus, and he had discovered that if you irradiate certain areas, you can get certain effects; you can find the obesity center in the brain, you can destroy the pituitary with the beam, particularly in rats. Then his studies were extended to monkeys. He was in charge of the animal studies, and [he, Dr. Donald Van Dyke and Dr. Lawrence] would study the various endocrine parameters. Dr. Donald Van Dyke is very ingenious and a valuable member of the staff who's now across the Bay.

Hughes: How was the decision made to move from animal studies to humans?

Metastatic Breast Cancer

Born: Let's take the idea and the decision and separate them. Dr. Lawrence, Dr. Tobias, and Dr. Van Dyke had the idea, since surgical removal of the pituitary was a feasible procedure with the advent of cortisone replacement therapy and since the surgeons were doing it with limited success in metastatic breast cancer, that we should consider [pituitary irradiation] for humans, using this as a means of doing a noninvasive hypophysectomy. That idea had been cooking in their minds when I came here, and then the decision was made, let's really settle this; let's get together a group of people to talk it over.

So Dr. Lawrence called together a prestigious group of people from all over the United States. There was Dr. Charlie Huggins, who later became a Nobel Prize winner, from the University of Chicago; he of course, is one of the foremost cancer researchers. There was Dr. Bertram [V.A.] Low-Beer, now dead, and then there was, I think, [Howard C.] Naffziger. Dr. Naffziger was head of the neurosurgery department of UCSF. I think he was at that meeting, but I'm not sure; also Dr. Tobias, myself, Dr. Lawrence, and Dr. Merrill Sosman, a radiologist from Harvard Medical School and Lawrence's old professor. We met down here in the library conference room.

Hughes: Can you put a date to this?

Born: Well, let's see, that must have been early in '54, or late in '53. The group was terribly enthusiastic about going ahead. Dr Huggins was particularly enthusiastic because of his work on the hormonal control of breast cancer.

Hughes: Why was this such a promising form of treatment?

Born: Because breast cancer was one of the worst killers of women that existed and hormonal control seemed to offer great hope. Pituitary irradiation with the cyclotron beam might bring about this control.

Hughes: And this was a very directed beam as opposed to the neutron beam.

Born: That's right. Supposedly this would be very effective in curing people of metastatic spread of mammary carcinoma by knocking out the endocrines that promoted the growth and spread of tumors.

Hughes: Was it ever a consideration to treat a breast tumor directly?

Born: No. If there were a discreet tumor localized to the breast, then you'd remove it by surgery. But this is a case where it's all over the body, so you can't treat it directly.

Dr. Huggins was immersed in breast carcinoma research at that time; that was one of his great interests. He was enthusiastic to find some way of cutting down on this terrible problem of breast cancer. The two radiologists involved, Low-Beer and Sosman from Harvard, were there to give a balance so that all the medical disciplines needed to make a treatment decision would be represented. They further gave balance because we didn't know at that time what doses to use. Dr. Low-Beer said at that meeting, "Well, we'd better start out with 50 rad per treatment." That was the traditional approach of the radiotherapists—to use small fractionated doses over a long period of time.

Hughes: Using x-rays?

Born: Using x-rays. And so this is the way we started out, with great caution. Later we found we could safely increase the dose with heavy particles many fold in a given fraction. Dr. Lawrence had pulled together this group for a balanced decision so that every aspect could be considered. Dr. Naffziger, the great neurosurgeon, was there. He didn't make much impression on the rest of the group because he wasn't particularly enthusiastic. The decision was made [at this meeting] to treat these patients.

Donner Pavilion at Cowell Hospital

Born: Meanwhile, we had gone to a number of donors, and we had been able to get together the funds to build our

[Donner Pavilion] at Cowell Hospital.

Hughes: Were the two things directly related? I mean, was it easier to get funding for the pavilion *because* you had this [opportunity] to [treat breast cancer?]

Born: Well, we saw that coming up. The president of the Donner Foundation [William H. Donner] had been very generous with us over a great many years from the time of Dr. Lawrence's and his brother Ernest's initial contacts with him and the building of [Donner Laboratory]. His son, Robert Donner, Sr., became president of the Donner Foundation. He developed chronic lymphatic leukemia and Dr. John Lawrence was a consultant in his care. That probably made the tie even closer. So we approached him, and Bill Donald as university physician says, "I'll work it out with President Sproul that you can build your unit right here at Cowell Hospital." But we had to find the money, so Lawrence had to go out and dig up the money. He got $50,000 from the Donner Foundation, and $37,500 from Edith Kiersted in memory of her husband.

Hughes: And this was all *John* Lawrence's efforts at this stage.

Born: Absolutely.

Hughes: It had nothing to do with his brother.

Born: Oh no, oh no. Then we obtained smaller amounts from other people, and so had enough money to build the shell of the building. It was a touch-and-go business of getting enough bucks to build it. The AEC was the supporter of most of the programs of this laboratory at that time, and through it we got the cabinetry and things like that to equip the interior of the shell. But we had to dig up every penny, and the university didn't put in one cent. It was accomplishing a very tremendous thing to go from the concept of a building to the actual physical completion within, say, a year. Things don't happen like that at the university level.

John H. Lawrence

Born: This is where Lawrence has been preeminent: in building people, in building programs, in building the buildings, and in building education for younger people at the post-doctoral level and encouraging them to come to Donner Laboratory from abroad, from here, from everywhere.

Hughes: Is it "stick-to-it-iveness" once he decides that the wants something?

Born: Yes, and an indomitable will to accomplishment. His mind is fixed in these channels that he has established as essentially the valuable approaches to the solution of problems. He has channels that have proven successful over a number of years and he utilizes these.

Hughes: Is that still possible now that he's in virtual retirement?

Born: It isn't as possible because who wants people around now who should be leaving the authority to others? I'm sure it's very uncomfortable for the director [Edward L. Alper] of this building to have two ex-directors [Lawrence and Born] occupying the premises, because [we] all look at things from our own viewpoint. The last thing that the director needs is advice from somebody who says, "This is the way I'd do it." Lawrence is respected by everyone including the present director, highly respected. But I think when it comes to the actual running of an institutional program, the director himself has to make the decisions. His influence, however, can be felt.

Metastatic Breast Cancer (continued)

Hughes: Can we get back to the pituitary irradiations?

Born: Yes. After this decision [to treat humans with heavy particle pituitary irradiation] Dr. Huggins said, "I'll send you patients who have evidenced that their disease is under hormonal control; patients that I've done adrenalectomies on at the University of Chicago and who have had a remission in their disease as a result of the adrenalectomies. Their disease is endocrine-sensitive, and so by adrenalectomy we're already shown that hormonal intervention has helped them. Now if we have their pituitary ablated, they should have another beneficial response. These are people who showed a temporary response, then their disease progressed again. So they need to have something else done for them."

So then Dr. Huggins sent us a number of patients. The first group of 30 patients were primarily mammary breast carcinomas. There were several that were not, but 25 or over were.

Hughes: And they all came from Huggins?

Born: Most of those came from Huggins, and a good many of them he had already done adrenalectomies on. He sent us the best of his patients. The patients were all tremendously inspired by Dr. Huggins. Dr. Huggins was [that kind of] person. A patient would do anything in the world that he wanted him to do, *absolutely* anything. And so he said, "I want you to go out to California."

There was a congressman's wife from Illinois with a far-advanced metastic mammary carcinoma; she had had an adrenalectomy. A number of other patients had had adrenalectomies. We put them into our unit [Donner Pavilion] then. Our unit was finished.

Hughes: Was there pressure to complete that unit knowing that these patients would be arriving?

Born: We had pressure to complete that unit. This was a period in which we had every bed filled with patients who were gravely ill with advanced metastatic mammary carcinoma.

Hughes: Does that mean that you had 30 beds?

Born: We didn't have 30 beds, we had every bed filled.

Hughes: You spoke of 30 patients....

Born: Thirty patients, but we didn't do them all at once, you see, because we were following Dr. Low-Beer's admonition that we'd have to give them 50 rads at a time.

Hughes: So it was going to be a *long* process.

Born: So it was taking 60 days to several months for the first patients; we were taking them up there daily for months.

Hughes: This was the 184-inch [cyclotron]?

Born: This was the 184-inch, and has been, except for some early skin cases that we have done on the Bevalac but that's only just started. So there's only been one or two therapy patients there and that's more investigation than therapy.

We have eight beds [at Donner Pavilion] and they were pretty well filled all the time. Those patients were too ill to do anything but stay, and they stayed on until they died. At that time I was the primary one taking care of the patients, and, as I tell some younger people, for the first three or four years of that operation, I never had a Christmas or a New Year's or a weekend off. The responsibility was on my shoulders to see that those patients got the best of everything.

Hughes: What were the results with this first group?

Born: Well, with this first group, the results were probably equivalent to those found elsewhere, namely, that you could get a temporary remission.

Hughes: Were you using the 50 rad throughout?

Born: We changed. It wasn't long before we increased the dose. We knew that it didn't have to be 50 rad; as a matter of fact, we know you can give a thousand rad without any problem. But we were constrained by the radiotherapists and conventional conepts of radiation dose fractionation, as there was no knowledge about fractionating therapy when using protons. So they had to extrapolate their own knowledge to cover a new modality.

Hughes: What sort of criteria were you using to increase a dose?

Born: Well, we had had the animal studies, and in these, larger fractionated doses were well tolerated. The one area where you're always safe is where you have done studies on animals and you know what has occurred in animals, and you can utilize that experience in making your judgment in other areas. But, of course, you don't translate directly from animals to humans because they're different, totally different. But we had done the monkeys [whose pituitaries are in a location similar to that in humans].

Hughes: Was the procedure of radiation using the plastic mask first devised for monkeys?

Born: No, in the procedure with monkeys, we used little screws fixed into the skull. The first thing we thought of was stereotaxic frames, namely, metal rings that you fix to the head by making a tiny skin incision and then screwing a sterile screw right into the table of the skull.

Well, we thought there must be some better way of doing it. It was one of the men in our shop, a machinist, who came up with the idea of making a mold of the patient's head and then using this as a cast. So he made [a cast] and wrapped strips of cloth [around it] and then brushed plastic material onto [the strips]. There weren't really good plastic materials at that time, so it was a laborious process, sort of like wrapping a turban around a patient's head, and then painting it with this plastic material as you wrap it. This man, whose name was Way Pratt, is now dead. He thought of this technique and we've used it ever since. Now it's very easy because you have good plastics that you can pour so that you don't have to do this wrapping process.

Well, actually, let me correct one thing about the Way Pratt technique: you didn't make plaster casts of the head. You put these [strips] directly *on* the patient's head, you wound them around the patient's head, and then you cut them off. So you use [the resulting] turban, impregnated with the plastic which was allowed to cool, and then you cut it off. In fact, the plastic was primarily a plaster-like substance. When you say "plastic," all you mean is something moldable. But then we got to the idea of making a cast of the patient's head and then making a mold out of this casting. You could get a very tight-fitting mask, so that no matter what the patient did with his head, and of course the heads rotated while being treated, the pituitary was not getting more than a half a millimeter out of line if you had a well-made mask.

Hughes: You really could fit the mask that closely?

Born: Very accurately and closely. By the end of 1954, having started in the middle of the year sometime, we had done the 30 patients. Then the machine [cyclotron] was shut down for a full year for making improvements in it from the physics standpoint. And of course, the machine was used by nuclear physics, nuclear chemistry, and ourselves. So we couldn't do any patients for a year.

Hughes: Do you know anything about the scheduling of the cyclotron? Were you given a certain number of hours every week?

Born: No, it was very flexible. We'd tell them when we wanted it and we'd get it.

Hughes: Was there any bad feeling by physicists who were [waiting to use the cyclotron]?

Born: Not really, because they were interested in the work. They were as fascinated as everyone else. It was a cooperative thing; they realized that you couldn't really run a patient in the middle of the night, and so they made [the scheduling] flexible. Then after a while, I forget just when it was, the machine was designed so that you could divert the beam into another cave, and so you wouldn't tie up the machine for only one study.

Hughes: I couldn't find any reference after 1962 to the use of the high-energy particle beam for the treatment of breast cancer.

Born: No, we stopped it.

Hughes: Why?

Born: Well, we felt that in order to continue with a program like that we should either have very clear-cut results of benefit to the patient, or we should have developed criteria by which we could select patients that would respond, and we didn't have either. We had very fine people working with us—biochemists on our staff who were working on very sophisticated endocrine assays, trying to find some specific which would have a stimulus to breast carcinoma and that could be used as tools to study whether or not a tumor would be responsive. We worked hard and diligently.

Now they're half found, they've come a long ways. They've found estrogen receptors in the breast within the last few years. If a woman or a man—men get mammary carcinoma too—has surgery, studies are done on the excised tumor tissue to see whether or not it has estrogen receptors and progesterone receptors, and with this information one can then predict the best form of treatment for that patient. That's an advancement made within the last few years.

Hughes: Does that perhaps mean that the program may be revitalized here if that predictive sign can be worked out?

Born: There has been some talk by some members of our staff on reviving that program. I'd want to see more than that; I'd want to see that the pituitary itself was responsible rather than the hormones from the ovary.

Hughes: While all this work on breast cancer was going on, you were also pursuing other diseases.

Acromegaly

Born: The logical progression was: Here we were irradiating a normal pituitary, so why not get a pituitary that had a tumor and directly irradiate the tumor itself? So for that reason we got into acromegaly. There we had a patient population which had a disease that we thought we could really treat. And it did work out exactly that way.

Our first patient was a huge hulk of a man from Oregon. He was probably the most pictorial acromegalic you've ever seen. We couldn't get any response from that patient because he had all the other pathology that goes with far-advanced acromegaly; he had a huge heart and other enlarged internal organs. Then he went out fishing in a lake and had a coronary and died so we didn't have a very long chance to follow him, but we did on the others. Then we'd get more and more patients with acromegaly and have a chance to follow them, and it's been a very successful thing.

[When] we started treating these patients, we had not many criteria [by which] to follow them. There were no growth hormones available at that time. Of course, the most important thing now in treating anyone with a pituitary disease such as acromegaly is to measure their growth hormones [to determine] the activity of their disease. Well, growth hormone [measurement] was not a feasible thing. Dr. [Choh Hao] Li was the *only* one who was working in the field of growth hormones. He was extracting pituitary extracts.

Hughes: He was at the medical school [U C S F]?

Born: He was on the campus here. We still had at that time some of the courses for the first two years of medicine: we had physiology and gross anatomy; it was all done here, over in LSB.

Hughes: Is this now mid '50s that we're talking about?

Born: Yes, we're talking about the late So C.H. Li was asked by John Lawrence if he'd do a couple of growth hormone assays, so he did three of them on the patients. I suppose these were the first growth hormone assays that were ever done on acromegalics.

Dr. Li in return wanted *our* help. He needed human pituitary extract to do [growth hormone assays] and so he wanted pituitaries. There was an endocrinologist at UC Medical Center who needed human pituitary material to treat a patient, a young girl who was retarded in her growth.

[Tape 3, side 1]

Born: So Dr. Li, in return for the favor he was doing us, suggested that it would be very helpful for him if we would collect some human pituitaries. So that seemed to be my job, because I wanted the growth hormone assays on these patients and wanted the future cooperation of Dr. Li. I then took it upon myself to contact all the many pathologists that I could find in the Bay Area to get pituitary materials from patients who had died. I also had to get permission from the families to do the posthumous removal of the pituitaries, also to select patients who had not died of contagious diseases or anything that makes their pituitaries dangerous to utilize. So I think that [in exchange] for Dr. Li's three assays I collected about 140 pituitaries.

The sequel of that story was that by the time we had all these collected and extracts done, why this young girl had exhibited a normal spurt of growth. But it [the pituitary extract] was used. I think you'll find references in papers at the Medical Center using human-grown hormone extracts to treat a patient. Shortly thereafter, a pituitary bank was established in the Bay Area for medical research purposes.

Hughes: Was this something new?

Born: Yes.

Cushing's Disease

Hughes: Was the progression to Cushing's disease a logical one as well?

Born: I think here it very much is. Dr. Lawrence had been a resident under Dr. [Harvey] Cushing at Yale before coming out here and was very much interested in Cushing's disease and Cushing's syndrome.

There's a controversy as to whether Cushing's disease is a disease of the pituitary or a disease of the adrenals. I believe that Cushing's hypothesis was that it was a disease of the pituitary or a disease of the adrenals. I believe that Cushing's hypothesis was that it was a disease of the pituitary. Lawrence wanted to treat the pituitary in Cushing's disease because the pituitary was putting out the hormones that were stimulating the adrenals to put out more cortisone. As the adrenals put out more cortisone, 24 hours around the clock, the patient's

Cushing's disease progressed, and there was no way to turn it off; the pituitary just kept stimulating the adrenals. So this was a natural progression and one that was an important one to me.

Hughes: That treatment is successful?

Born: Yes, this is a successful treatment. One of the previously established treatments for Cushing's disease was proving detrimental to the patient's future well-being because it involved removal of the adrenal glands. As a result of the removal of the adrenal glands, the pituitary itself became enlarged, and at the same time, the patient developed an inability to handle the corticosteroid problems and became deficient and developed deep pigmentation of the skin. This happened only in those patients that had their adrenals removed and had had a subsequent enlargement of the pituitary.

We thought that if we treated these patients by irradiating the pituitary rather than by removing the adrenals we could remove the possibility of them going on to have this further complication.

Hughes: What about hormonal replacement therapy in all of these cases?

Born: It's a relatively simple proposition since cortisone is available as a medication. When we first started [heavy particle irradiation of humans] in '54, it hadn't been too many years since cortisone was readily available.

Hughes: Wouldn't one have to replace *all* the pituitary hormones?

Born: Not all of them. First of all, we probably don't know what all the hormones are; some are produced in such small amounts. The ones that we regard as essential are the adrenal hormones themselves, then, secondarily, the thyroid and gonadal hormones. The last two aren't life essential, but the first one is.

Diabetes

Hughes: And the progression to the treatment of diabetes?

Born: The diabetologist had discovered that [when] a patient had a spontaneous hemorrhage within the pituitary, it caused a change in his diabetic retinopathy, and so it clearly indicated that the pituitary had some role in this. The neurosurgeons at this time were doing hypophysectomies, that is, surgical removal of the pituitary in diabetic retinopathy, but they had one very great problem postoperatively, and that was that the patient would go into an unexplained coma that might last for 16 to 36 hours. This would frighten the attending physicians to death because they didn't know whether the patient would come out of the coma or not.

And so Dr. Bronson Ray, who is chairman of the Department of Neurosurgery at Cornell, one of the leading neurosurgeons in the world at that time and a friend of Dr. Lawrence's, asked Dr. Lawrence if he would do some of these cases. We had already decided that we would, and Dr. Ray sent us some [patients], and we got more from all over the country; there was never any lack of cases, because the prognosis was so bad for these patients with diabetic retinopathy that any physician handling their case wanted to get them on some other form of treatment that might have some semblance of hope to them, as fast as he could. There were always more patients than we could handle.

We were not treating them for their diabetes; it was for the complications of their diabetes which would either be large or small vessel disease. Large vessel disease was coronary arteriosclerosis in which patients would have an increased morbidity due to heart attacks. Small vessel disease affected the small vessels of the kidney and of the eye; patients would get atherosclerosis and have kidneys that would no longer function, and have to be put on the kidney machines or they would go blind as a result of hemorrhage in their eyes. We were treating patients who had a very bad prognosis due to complications of their disease. We started with the worst possible cases [which made evaluation difficult].

Hughes: Doesn't that present problems at times if you're working with very ill patients to begin with? Isn't it difficult to tell exactly what the cause of death is?

Born: I think pathology is such an exact science that you can pretty well pinpoint the cause of death in say, 90 percent of the patients, maybe 95 percent.

Hughes: Were there and are there any other diseases being treated by this method?

Born: Well, there are other pituitary tumors, and then of course you can go outside of the pituitary, you can go to brain tumors, you can go to tumors of the lung, things like that of which we've done some. Direct irradiation of brain tumors and of tumors of the lung has found its place in the expanded program that we're doing with the very heavy particles that will be produced by the bevalac.

The Omnitron and Bevalac

Born: Use of the alpha particle beam [produced by the 184-inch cyclotron] has led directly to the design and completion of the facility known as the bevalac so that the heavier ions could be used in the direct irradiation of tumors. In that latter program we have protocols for [irradiation of] a large number of tumors.

Hughes: Was the bevalac built specifically for...?

Born: Oh, no. The bevalac was built at our urging to supply us with the beam of very heavy particles.

Hughes: So it has specifically medical applications.

Born: That's right. And it happens that we had first designed a machine called an omnitron which would supply the very heavy particles. Dr. Tobias was the leading person responsible for that. This [omnitron] would accelerate *all* the heavy particles, the whole range of them, all the way through the periodic table, essentially up through uranium. That [design] was presented to the Atomic Energy Commission, and I think we practically got to hearings on the congressional level, but the price kept escalating. Originally it was $15 to $20,000,000, and then it got up much higher than that, and we felt that the potential value might not be cost effective.

Hughes: When was this roughly?

Born: It must be fifteen years ago. In 1966 to be precise. Dr. Lawrence thought that if we built a new accelerator, it should be used by all the disciplines—it should be used by the physicists, the radiochemists, the nuclear physicists, as well as by biology and medicine; it should be a shared machine. He couldn't find enough physicists and chemists who would go for this machine because they had their own patterns already established of what they wanted for themselves. I think the chemists were more interested in this than anybody else. But Lawrence said, "Okay, if we can get everybody, all the physical sciences interested in using this machine, we're justified in spending $25,000,000. If it's for medicine alone, I don't think we can justify it." Lawrence kept the pressure up: "Can't this be done for less?"

Then a new idea came up, developed between people on the Hill and Dr. Tobias, to use the hilac as the injector for the bevatron: [to] connect the two machines and accelerate the particles at high energy through a vacuum tube from the hilac down to the bevatron, and for a few million dollars, [to] accomplish what would otherwise cost us $25,000,000 or $30,000,000.

[This proposal] grew directly out of our need for a medical accelerator of very heavy particles. It was pushed by our staff and we finally got the chemists interested in it on the Hill. They participated in putting the hilac on the line, and so did the physicists with the bevatron. And so it is being used by all three [groups].

Hughes: Can you tell me about the reaction of other scientists and the medical profession in general to the high energy particle therapy?

Born: They've been intensely interested in it. The medical people have been interested. I have more knowledge about the medical people's interest in it and the people in the biological sciences than the physicists'. I'm sure the physicists are interested too. There's been a high degree of interest all along.

Collaboration with the Russians

Hughes: Is it being done anywhere else?

Born: Yes, for proton accelerators but not for the very heavy ions. We've had a number of people come from different countries, and after we started out, there were other medical accelerators built. Right now, for cancer work alone, the Soviet Union has three machines. They've paid a number of visits here.

Hughes: Is there any exchange of expertise?

Born: Yes, we have always been strong on international cooperation at the scientific level. Science and politics are different areas. Russian scientists have always felt close to the people in this laboratory because they felt that we had the greatest freedom from categorizing them on other bases, that we were thinking science and they were thinking science.

The Russians made two or three visits to see the 184-inch and its medical uses before they built their own. Of course, they have followed our work very closely in the literature, and two years ago last December [1976], they had their first international conference on this subject. They invited Dr. Lawrence, but he couldn't go because he had just had surgery, and they invited me and I couldn't go, but we had about four or five other people go from the laboratory. It was in December in the middle of winter in Moscow. It would have interfered with the Christmas holidays; I'm afraid I was selfish on that.

The Russians had a very neat ploy. They invited you to come to this conference, but would only pay your return fare from their capitol city to our capitol city. They were safe that way; they knew they wouldn't get stuck with you as a permanent visitor because you had a ticket home.

Date of interview: 20 February 1979

Research at Donner Laboratory

Hughes: Dr. Born, was there ever and is there now an overall research theme at Donner Laboratory?

Born: There is an overall research theme, but you have to consider it by fields. The fields roughly are nuclear medicine, the sciences basic to an understanding of clinical hematology and biophysics with respect to the use of the accelerators on the Hill and their use in mammography, which is a radiodiagnostic procedure, and other imaging procedures of bone, and the use of the heavy particle beams in therapy. So there's a three-pronged program in addition to traditional ones that we've carried on, mainly in the field of lipoproteins—understanding what lipoproteins have to do with development of atherosclerosis and how they're affected by diet, by exercise, and things like that. These are broad areas. I haven't meant to exclude smaller ones which are quite consonant with the main thrust of the laboratory's research. [Research in the main areas] will have its own ramifications.

For example, if we go into radiation of tumors, then we get back into the pituitary thing and then into all the areas of endocrinology. There are distinct fields, distinct interests. Now, the emphasis on these will change with time, and it may be that for a while [there will be emphasis on applied research,] then there may be some increase in activity in very basic research which is bound to be necessary in order to pursue a new clinical approach.

Hughes: Would you say that funding has a role in emphasis?

Born: Funding has become more and more important in research to the extent that our people have to look for additional funding because of cheap dollars alone. A program that we could do for $3,000,000 a year five years ago is now $8,000,000 a year. People have to go out and get money. They examine their areas of interest and expertise and write up grant proposals along those lines and request monies.

Hughes: But still trying to stay within the three areas that you mentioned?

Born: Still trying to stay within their main areas.

Hughes: And the smaller branch-offs, are they fortuitous? Do they develop as a result of research in the three areas that you mentioned?

Born: They do, and they also develop as a result of the changing interest of our researchers. Some of our researchers, like Dr. Tobias, are tremendously prolific in their thinking. A lot of their new ideas arise because of the old ones, and then they look to the possibility of taking on young graduate students or young research personnel under grant support to explore those areas. You can't stick with the same lines pursued in a very pristine fashion because they become time-worn, particularly if they aren't as beneficial in their output as you'd want them to be.

Interactions of Donner Laboratory

The University

Hughes: Would you say that because a certain percentage of the funding for Donner Laboratory has come from outside the university that the lab has a certain autonomy that a department might not have? In other words, can the Donner Lab function somewhat more autonomously than a department within the university?

Born: Well, I'm handicapped, because I don't have close knowledge of how departments function within the university. I would say that it may not give [the laboratory] more autonomy but it certainly gives it greater breadth.

Hughes: Has this ever led to problems in dealing with the [university] administration or with other departments?

Born: It has in the past because they [university administrators] didn't know which pocket to put it in. They didn't know whether to put it into the university side of things. For a while, we could take on grants in this laboratory that didn't go through any department; they'd go through the dean of the graduate school. That was very beneficial to us because we weren't then regulated by a department. Being free of departmental control has been valuable.

Within the Laboratory

Hughes: Could you describe the working atmosphere of Donner Lab? I'm thinking now of things like the degree to which information and equipment are shared, frictions, pressure, the degree of sociability, political discussions, the relationship of people working on different projects in the laboratory.

Born: The relationship has in the past been very good. We've operated under different regimes. The first regime was under the founder of the laboratory; that's vastly different. You can't duplicate that kind of regime again, because the person who founds a laboratory like this has in his mind an idea of what he wants to accomplish and that encompasses all the people working in the laboratory. We started out in this laboratory, and I am also speaking about the Lawrence Berkeley Laboratory, as rather a paternalistic organization. Those things no longer exist.

An example of the paternalism that did exist: We had one man on the Hill who was the personnel manager, and he died of carcinoma of the pancreas, so we took his widow to work in the library. We had another woman whose husband was a physician in the community. Their daughter was kidnapped and murdered by a graduate student; that was a very famous case. So we took her on; she worked for us until she retired last fall; [we] provided two things in her life: one, funds to live on and secondly, something that occupied her time in her deep moments. We've done numerous things like that.

But those things you can't do any more. You have no freedom of choice. The result was that your employees were loyal. You also got a spirit of helpfulness and people sharing with other people. You had a greater community of interest because you felt you were part of this entity and it was a laboratory, and part of the dreams and aspirations of the person who was the head of it. It worked to bring people [together], to make things more cohesive.

But as size increases, as your regulations increase, as your funding becomes dissipated, you disperse. It's not totally due to the person alone who's the director of the laboratory, but it's due to all these other factors and they have a dispersive influence. I'm not saying that it can't accomplish great good, but when you do get large in size, have multiple funding, when all your investigators are looking for outside monies to support facets of their work, then you become a depersonalized organization, because you're then dealing with regulations from the HEW, from whatever funding agency you have, from the parent agency, which is the Department of Energy. You have the university, and you have the frictions between the university and the laboratory. There are no buffers in between any more.

Hughes: Would you say then that each research unit is functioning now more or less as an independent entity?

Born: Each research unit will function on a cohesive basis, I think that's quite true.

Hughes: But not much interaction between the units?

Born: We'd like to have interaction, because that's been the pattern of all the past. But whether we can effectively get interaction, I don't know. We're at that stage now where we're almost getting 50 percent of our income from agencies other than DOE. Bringing these things together is more difficult because each one wants to have his contract reimbursed for what other people are having him do for them. So we're getting into that now, and I don't know if it's going to be an irretrievable situation. We *try* to keep it together, to have people share things. Whether we're going to succeed in the face of expansion, I don't know. It's a dangerous situation from just the standpoint of the interaction of groups and the cooperation that you might have if you were smaller.

Hughes: Has there been any sort of attempt to keep a balance between basic research and clinical research?

Born: We haven't had that problem for the reason that we've always been predominantly basic research. The motivating philosophy has been that basic research is the true goal of science, and that anything that we get as spinoff in human applications is a highly desirable thing and essentially is the goal of all research: to find an application whether it's to man's ailments or to his well-being in some other senses—economic, political, social, or otherwise.

Hughes: And yet clinicians have always had a place at the laboratory.

Born: Yes, they have.

Hughes: But you say a minor one, at least in terms of numbers?

Born: The clinicians can only operate if they have some basic contributions to offer to the clinical sciences. In other words, when we were handling a patient, if we could do investigations on that patient which nobody else could do and if we could come up with new information about that disease which was due to the expertise of our own people in the unusual facilities that we had, then that was fine. And that's what we tried to do. There's never been any clinical work for clinical reasons alone. In other words, if we were handling a medical problem, only to handle that medical problem and not to have an input into it from the basic research that goes on here, we wouldn't be doing good research.

The Radiation Laboratory

Hughes: Could you tell me something about the relationship of Donner Laboratory to the Radiation Lab? I'm thinking now particularly about the days when Ernest Lawrence was still alive, and how that relationship may have changed.

Born: Yes, Ernest Lawrence was intensely interested in what benefit the forms of ionizing radiation that were developed within this laboratory, both from radioisotopes and the beams of ionizing irradiation created by the cyclotrons, could have for man. He had an intensely strong belief that they would be highly important in the treating of cancer. He was strongly motivated by the biological problems of man and the ailments that resulted from them and the potentialities that the physicists might have towards making some contributions. I think his interest in biomedical problems was probably almost as intense as his interest in the physics. He pushed it; he was a great person to lend encouragement to anything that would have applications in biology and medicine. And it was out of that feeling that he brought his own brother here, John Lawrence, and that he had Dr. Joseph Hamilton and Dr. [Robert S.] Stone working here.

He also made radioactive phosphorus available to scientists throughout the world with no charge at all, so that they could use it in biological investigations because he knew it would open a new era. He himself demonstrated the biological usefulness of some of these [radioisotopes]. I believe that at one of the lectures given by, I suppose, Dr. Hamilton, Ernest Lawrence drank radioactive sodium so that it could be counted in him. So [an intense interest in biology and medicine] was part and parcel of him, and he [supported and] promoted it in every possible way that he could.

Hughes: Would you call [Ernest Lawrence's relationship with Donner Laboratory] a paternalistic relationship?

Born: His was really quite objective. It wasn't paternalistic in the sense that we regard the word which has rather bad connotations now. There is still a very strong interest in the biological aspects of radiation.

The primary complaint of the present director of the [Lawrence Berkeley] Laboratory, Dr. [Andrew M.] Sessler, was that we weren't doing enough. He proceeded on the theory that if we could treat ten patients up at the cyclotron, we could treat a thousand. But you can't quite do things that simply. But nevertheless, it goes to show what his intense interest was and is, and that he has a strong interest in the medical aspects. If something looked productive, promising, and so forth, he would help fund it from discretionary funds. I think he would support a sound biomedical project; probably give a little more weight to that than he would to one in physics. I have that much confidence in him as a man and his belief as to what to do.

Hughes: Do you think that's a general attitude on the Hill?

Born: It is the general attitude. A lot of the physicists have become tremendously interested in biomedical problems. They have the feeling that they as scientists in physics are trained in a scientific method which if applied to medical problems could produce greater results than those [obtained by] biological scientists. Maybe it's ego on their part.

Hughes: Do you think the basis of that is quantification? The fact that they feel that they can give a quantified answer?

Born: Oh, I'm sure it is. If they can discover particles that have a lifespan of a millionth of a second, then they feel that they can discover things that [are presently] incomprehensible in [biology and medicine].

Hughes: As a medical person, do you feel that the scientific relationship between the physicists and the biologists or the medical person is a fruitful one?

Born: I think without question that it is. When you get around to looking at Dr. Tobias' contributions—he was a physicist, now a biophysicist—his contributions have been extremely provocative. We were talking about our working with the physicists to develop a cyclotron that could be used for medical purposes, and how we wanted one that could be used [by physicists, chemists, and biologists]. Well, [the physicists] came up with the answer. You give them a problem, and if it's in their realm, they'll solve it, and they'll enjoy solving it, because it's enhanced by the biological importance of the problem.

Staff Seminars

Hughes: Turning to another subject, I was wondering about staff seminars. Are they held on a regular basis and who attends them?

Born: We have what we call a seminar series, but this is a lecture series. So that doesn't qualify, I think, with your definition of a staff seminar. However, staff seminars are done at the group level where you have a group working in the same field, like Dr. Tobias' biophysics group, [and] Dr. [Alexander V.] Nichols and his group, and Dr. Thomas F. Budinger in nuclear medicine research. In pituitary radiation, we have our seminars. There [have] never been any real seminars between the director of the laboratory and the entire staff.

Hughes: Ever?

Born: I doubt it would be possible in view of the size and diversity of the staff. Dr. Lawrence never had them. When I was director, I was told how important they were and that we must have them. We had a few; a new man came in [as director] with the understanding that they were essential to the laboratory. Well, if we have a meeting once a year, that's about it, and then it's a state of the union type of thing.

Hughes: Are the group seminars fairly informal affairs, so that a student could speak up?

Born: Oh, yes, they're very informal affairs and they are minimally structured. In other words, there'll be a general area that will be discussed but it won't be structured in a highly organized sense. One or two or three people present certain areas and then there'll be discussions, there'll be planning, there'll be input from the others. It works well.

Visitors

Hughes: What about visitors to Donner Lab? Do they come on any regular basis?

Born: Well, visitors to the laboratory, we've had lots and lots of them. They come on a convenience-to-themselves basis. Dr. Lawrence was a great believer in promoting interchange among peoples. If a visiting scientist came here for a year, it would be great; if it were only for a day or two days, it would be beneficial, not to the same extent, of course. One of the pleasures around here is having lots of visitors from all over. We corner those people, we make them give seminars, we take advantage of them, we pick their brains and enjoy it.

Hughes: And they, of course, would be part of the laboratory's effort to disseminate information?

Born: Yes, very definitely.

Hughes: I'm thinking back to the *very* early days when people came particularly to learn about building a cyclotron, for example, and the Radiation Lab itself would send out key individuals to help in the construction of cyclotrons.

Born: You'll find that this occurred consistently throughout the whole history of the laboratory.

Radiation Hazards

Hughes: How aware were you and others of radiation hazards?

Born: Radiation hazards have been a prime concern from the time this laboratory was founded. It goes back to Dr. John Lawrence making a mistake early in the course of his career here when he put a mouse in a [victoreen] chamber and after irradiating the mouse, opened up the chamber to find the mouse was dead. He had closed this chamber so it was airtight and the mouse had suffocated. Nevertheless, before it was found that the mouse had suffocated, he was starting to put forth regulations on the hazardous aspects of radiation.

I think that when you talk to him that you will find he claims that he established the first radiation protection systems in the United States. He was well aware of the hazards of radiation; probably at that time this laboratory was more aware of them than anyone else; certainly more than hospitals, radiologists, or physicists. The physicists were extremely careless because they were interested only in finding out what the nature of the physical properties of matter were, and they didn't think that the forms of radiation that they were encountering were going to be particularly dangerous.

Hughes: What about a person like Joseph Hamilton? I believe it's thought that radiation exposure certainly had a part in his death. Was he very aware of taking risks, do you believe?

Born: He took lots of risks all through his life, a tremendous number of risks. You can have a group that's highly cognizant of the risks of radiation, but you'll have individuals among them who will totally disregard [the risks].

Hughes: Was that just his medical and scientific zeal?

Born: I would say so. He undertook enormous risks. Dr. Low-Beer also died of leukemia probably due to radiation. He ws a radiologist.

Directorship of Donner Laboratory

Hughes: The years you served as director are really beyond the scope of this project which, in theory, ends about 1960, but I was wondering if there was anything for the record that you wanted to say about those years?

Born: Shortly after I came here I became assistant director, and I worked so closely with John Lawrence that the transition from assistant director to director was essentially meaningless. The kind of cooperation that we carried on before, we continued to carry on. This was not completely satisfactory; some of the people would prefer to have had an absolute change. It was a continuation of Dr. Lawrence's philosophies, his ideas, his practices.

Hughes: And some people were hoping to have a change of direction at that point?

Born: Some people were.

Hughes: How would you assess the Donner Lab's position in respect to laboratories and research units doing similar research in this country and across the world?

Born: There are a number of laboratories that have grown up since this laboratory was begun, but this laboratory still holds its place among the best of the laboratories that do exist.

We probably have a broader program. It's hard to find an exact equal to a laboratory because they all have somewhat different missions, but this is still a first-rate laboratory.

Hughes: Do you think that there's one area of research that is particularly outstanding?

Born: I think if anything that this laboratory will be known for its work with the tools provided by the Hill, namely the accelerators, the radioisotopes and the beams of ionizing radiation produced by the cyclotrons for biological and medical studies. I think that will be its fame for all of the future.

Hughes: Well, Dr. Born, I think that's a good place to end.

Born: Well, thank you very much.

APPENDIX

Biographical Materials, James L. Born, M.D. 84

Born

D.M. Wilkes; 843-2740-5771

RELEASE 10:00 a.m. April 24, 1970

Dr. James L. Born, a distinguished medical scientist and administrator, today was appointed Director of the Donner Laboratory, a segment of the University of California Lawrence Radiation Laboratory,Berkeley.

The appointment, effective July 1, 1970, was made by University President Charles Hitch on recommendation of Dr. Edwin M. McMillan, Director of the Lawrence Radiation Laboratory (LRL).

Dr. Born will succeed Dr. John H. Lawrence, the noted nuclear physician who developed the Donner Laboratory from pioneering beginnings in 1935. Dr. Lawrence today announced his resignation as Director of Donner, effective July 1, at which time he will assume an appointment as a Regent of the University of California.

Dr. Born is well-known as a medical researcher, as supervisor of Donner Clinic and Pavilion and as a research administrator.

He was an original member of the research team, led by Dr. Lawrenc that in 1954 began to dvelop the "atomic surgery" technique for treatin pituitary diseases with the beam of high energy particles from LRL's 184-inch cyclotron.

Dr. Born since has played an important role in those phases of the research involving treatment, clinical management and follow-up and analysis of results. This unique therapy has been excellent in treatmen of acromegaly, Cushing's disease and other conditions.

Dr. Born's other interests have been in disorders of the blood, neoplastic diseases, occupational health and radiation safety.

As assistant Director of Donner since 1956, he has held much of the administrative responsibility for the Laboratory, which operates on an annual budget of approximately $4 million.

Dr. Born, 54, was born at Ann Arbor, Michigan. After receiving the B.A. at Ohio State University in 1936 and a law degree at the University of Wisconsin in 1940, he engaged in private law practice in Madiso

Reading/

Wisconsin for two years. From 1942 to 1944 he was acting assistant attorney General of the State of Wisconsin.

Abandoning the law, Dr. Born entered the University of Wisconsin Medical School, receiving his M.D. in 1948. He was an intern and assistant resident in surgery at Alameda County Hospital, in Oakland, California, from 1948 to 1950. He joined the Donner Laboratory as a research associate in 1951.

He was a Director of ths Alameda County Heart Associatinn from 1962 to 1968, and President of the Parents Council, Anna Head School, from 1962 to 1964.

Dr. Born was married to the former Jean Chapman in 1946. They have two children, Deborah, 19, a freshman at Vassar, and Stephen, 16, a junior in Berkeley High School. The family home is at 1151 Woods Road, Berkeley.

Donner Laboratory, sometimes called the "cradle of nuclear medici grew out of the initial biological and medical research with radioisoto and cyclotron beams, conducted by Dr. John Lawrence and others in the mid-1930's in the Lawrence Radiation Laboratory.

Donner Laboratory was completed in 1942, with funds provided by t Donner Foundation, and has been expanded since with additional gifts fr the Foundation and other sources. The Laboratory has cnntinued its tra tion of pioneering in nuclear biomedicine, and has developed during the last two decades a broad base of biophysical research and advanced study, characterized by collaboration of biological scientists, physicians, physicists, chemists, mathematicians, and engineers. The campus teaching Division of Medical Physics is an outgrowth of Donner's resear program.

Donner, as a part of the Lawrence Radiation Laboratory, receives almost all its support from the U. S. Atomic Energy Commission.

Lawrence Berkeley Laboratory
University of California

PUBLIC INFORMATION DEPARTMENT
415/486-5771

C. Hurley

FOR IMMEDIATE RELEASE

October 29, 1981

Dr. James L. Born, a distinguished medical scientist whose career spanned three decades at the University of California's Donner Laboratory-Lawrence Berkeley Laboratory, died Saturday, October 24, in Berkeley. He had been ill for several months.

Dr. Born, who joined the Donner Laboratory staff as a research physician in 1952, in 1970 was appointed director of the laboratory and served in that position until 1975. Since 1976 he had been director of medical operations, with responsibility for research programs involving patients suffering from cancer and various blood disorders.

LBL Director David A. Shirley said: "Dr. Born's 30-year career at the Laboratory coincided with some of our most important developments in nuclear medicine and particle radiotherapy. His contributions to those programs and his unswerving devotion and loyalty to the Laboratory were very significant factors in their success."

Edward L. Alpen, LBL associate director and head of the Biology and Medicine Division (Donner Laboratory), said: "Jim Born had been a key individual in assisting me with the management of Donner Laboratory since 1975. His loyalty to the Laboratory goals and his insistence on quality medical care for patients provided an environment of mutual trust and respect."

Dr. Born was a member of the original research team led by Dr. John H. Lawren that in 1954 began to apply the "atomic surgery" technique for treating pituitary diseases with a beam of high energy particles from the Laboratory's 184-inch cyclotron.

Through the years he played an important role in research involving treatment, clinical management and follow-up and analysis of results. The unique therapy has been credited with notable success in treatment of such hormonal diseases as acromegaly and Cushing's syndrome and other conditions. His other research interests included blood disorders, neoplastic diseases, and occupational health and radiation safety.

In addition to his medical research, Dr. Born shouldered many administrative responsibilities. He served as director of Donner Laboratory from 1970 until 1975 and was assistant director for 14 years before that.

Dr. Born, 66, was born in Ann Arbor, Michigan. After graduating from Ohio State University in 1936, he went on to get a law degree at the University of Wisconsin in 1940 and entered into the private practice of law. From 1942 to 1944 he was acting assistant attorney general of the State of Wisconsin, but left the profession of law in favor of medicine.

He received his doctor of medicine degree in 1948 at the University of Wisconsin and came to California. He was an intern and assistant resident in surgery at the Alameda County Hospital in Oakland from 1948 to 1950, and a staff physician with the Kaiser Foundation Hospital in Oakland until 1952 when he joined the Donner staff.

He served as a member of the chancellor's advisory committee on medical education at UC Berkeley and from 1972 to 1974 was chairman of the admissions committee and the task force on admissions procedures of the health and medical science program.

He was a director of the Alameda County Heart Association from 1964 to 1970 and president of the Parents' Council of the Anna Head School from 1962 to 1964.

He is survived by his wife, Jean, and their children, Deborah Born of Berkeley and Stephen Born of Gaithersburg, Md.

Memorial services are pending. The family requests that any memorial donations be made to Donner Laboratory, University of California, or to a chari of the donor's choosing.

# # #

C O P Y

Biography of James Lee Born filed with the University of California February 28, 1951. (corrected to March 11, 1952)

Full name: JAMES LEE BORN Date of birth: July 25, 1915

Address: 605 Boulevard Way, Oakland 10, California Telephone: Templebar 6-19

Place of birth: Ann Arbor, Michigan Citizen of: U.S.A.

Father: Frank G. Born U. S. A. Mechanical Engineer living

Mother: Leona Lee Born U. S. A. Housewife deceased

Place of marriage: Chicago, Illinois December 20, 1946

Maiden name of wife: Jean Louise Chapman living

Place of birth of wife: Minneapolis, Minnesota January 27, 1920

Number of children: one Number of dependents: two

Education:

1928-1930	Lake View High School, Chicago, Ill.		
1930-1932	Steele High School, Dayton, Ohio		
1932-1936	Ohio State University, Columbus, Ohio	B.A.	1936
1936-1937	Harvard Law School, Cambridge, Mass.		
1937-1939	University of Wisconsin Law School, Madison	Ll.B.	1940
1944-1948	Univ. of Wis. Medical School, Madison, Wis.	M.D.	1948

Previous Employment:

1940-1943	Wilkie, Toebaas, Hart, Kraege & Jackman, Madison, Wisconsin	Associate Attorney
1943-1944	State of Wisconsin, Attorney General's office, Madison, Wisconsin	Assistant Attorney General (acting)
1944-1948	Premed and Medical School (Univer. of Wisconsin) Madison, Wis.	Student

DOCUMENT SOURCE
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Archives and Records Office
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Folder No. Donner Lab: Donner Annex
Notes
Found By Karen Holmes
Dates early 50's

Biography of James Lee Born continued

1948-1949	Highland Alameda County Hospital Oakland, California	Interne
1949-1950	Highland Alameda County Hospital Oakland, California	Assistant Surgical Resident
1950-1951	Permanente Hospital Oakland, California	Physician (part time)
1950-1952	Cowell Memorial Hospital Berkeley, California	Associate Physician

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